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Volume 12, No. 1 January, 1957

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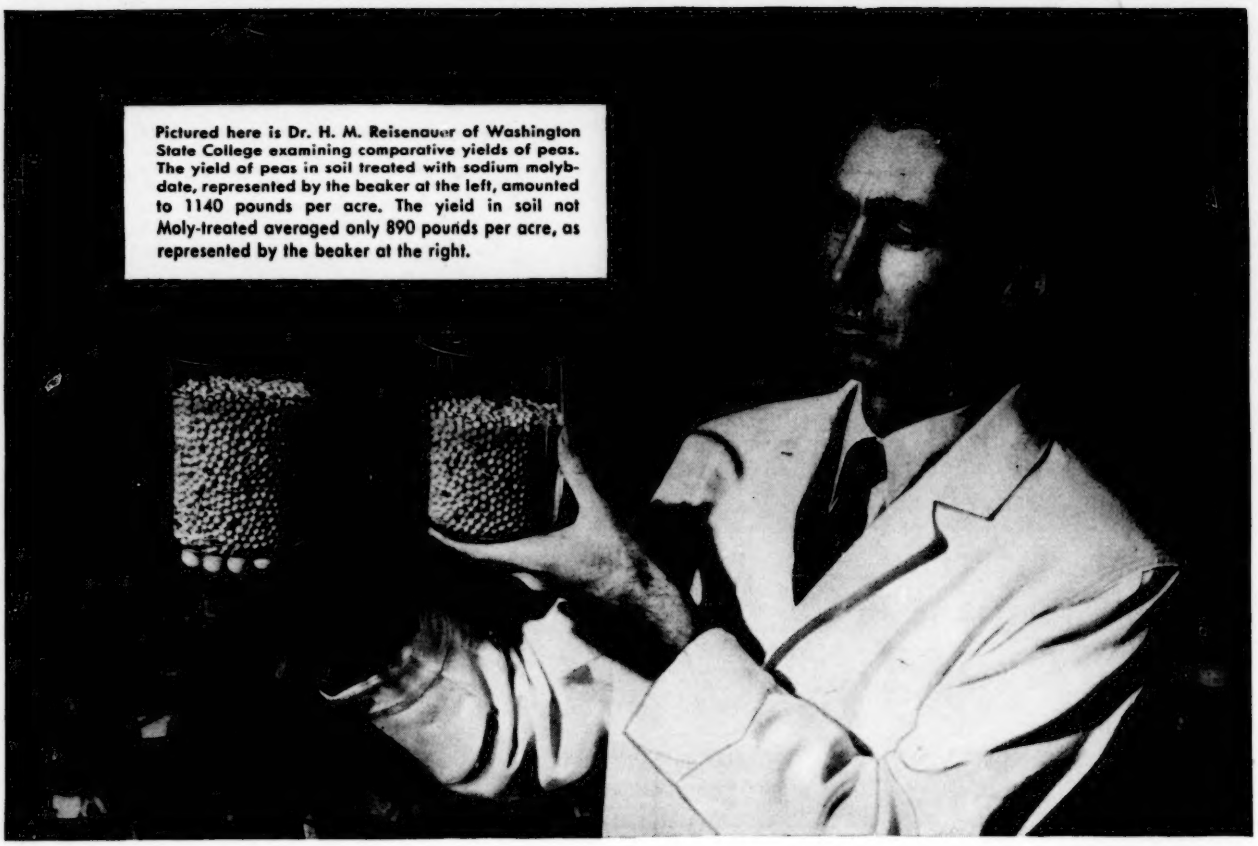
Drainage Committee Report



Pictured here is Dr. H. M. Reisenauer of Washington State College examining comparative yields of peas. The yield of peas in soil treated with sodium molybdate, represented by the beaker at the left, amounted to 1140 pounds per acre. The yield in soil not Moly-treated averaged only 890 pounds per acre, as represented by the beaker at the right.

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By adding sodium molybdate to the soil, Dr. Reisenauer obtained vigorous plant growth and greatly improved yield. The pictures reproduced above tell the story.

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Field observations and tests show that a deficiency of available Moly exists in American soils in many locations. The study of whiptail in cauliflower, for example, has led to the discovery of Moly deficiency in New York, New Jersey, Pennsylvania, Delaware, Maryland, West Virginia and Ohio. Intensive work on yellow spot brought to light a Moly deficiency in the citrus area of Florida. And the incidence of yellow foliage and low protein content of alfalfa has been successfully corrected by the use of Moly on molybdenum deficient soils in South Carolina, Idaho, Washington, and New Jersey.

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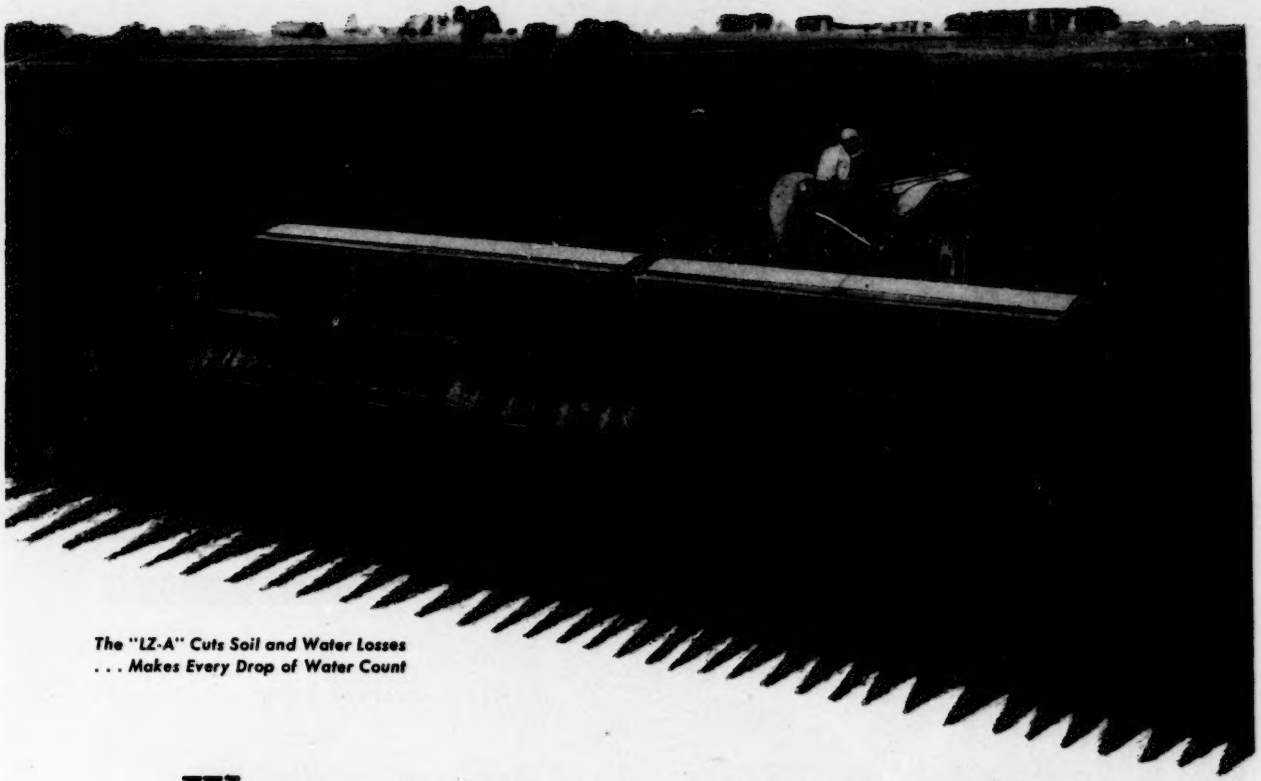

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VOLUME 12
NUMBER 1

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TO ADVANCE THE SCIENCE AND ART OF GOOD LAND USE

This JOURNAL is the official organ of the Soil Conservation Society of America. It is owned, edited, and published bimonthly by the Society.

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Cover photo:

Winter on a north woods farm, Lake Winnepesauke and White Mountains in the distance. Young Joseph Fletcher, Concord, snowshoes in rock cleared pasture of Smiling Hill Farm in Belknap County soil conservation district, New Hampshire.

S.C.S. Photo

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The Conservationists' Prerogative

HERSCHEL D. NEWSOM

Herschel Newsom

In this article, the author challenges Society members to help solve a group of problems involving conservation in its broadest aspects. The goal, of course, is the full and wise development of resources demanded by a booming economy both today and years in the future. He says it is your prerogative—your right and responsibility—to help guide these vast changes now underway in our country.

AMERICA is still growing up, still stretching in the direction of maturity and it is still having growing pains. In part, these pains are coming from the process that we have heard described many times as the "adjustment of people to their resources."

This, of course, is a never-ending adjustment—as members of this *Society* recognize better than anyone else. It is also the reason why soil and water conservationists—members of this *Society*—can and should play an increasingly important role in our country's development.

People can never live independently of their resources. No matter how large our cities grow, no mortal in town or suburb can ever be free of dependence on water and products of the land. Farmers, of course, know this full well.

Increasing Land Use

But the needs of people change as the size of our population grows and as we impose new demands on our resources. To meet our increasing requirements, for example, we now farm our land more intensively and use more water than ever before. The limits, as far as the layman is concerned, are nowhere in sight.

However, every conservationist knows that there *are* limits on our resources—limits not only of extent, but limits on the durability of land and water under increasingly intensive use. You who make up the *Soil Conservation Society of America* know these resources more intimately than the rest of us. You know the endless variations in quality, the danger signs of overuse, and the probable response of these resources to various kinds of treatment.

Now, more than ever before, America needs your counsel and your recommendations.

Apply Interests and Skills

Vast changes are underway in our country, involving adjustments of people to their resources. It is your prerogative—your right and your responsibility—to help guide these changes. With your training and experience you can help avoid the pitfalls of injudicious action on one hand and the perils of inaction on the other. With your expert knowledge you can help chart the routes our country should travel toward the full and wiser development of resources demanded by our booming economy.

Perhaps even more important, yours is the opportunity, derived from your interests and professional skills, to apply the golden asset of imagination to the problems ahead. *The times are begging for fresh ideas—for new and more effective approaches to the irresistible evolution of our country.*

Reach People's Needs

In all this it is the conservationists' prerogative—and challenge—to go beyond the details of the resources themselves, to the needs of the American people and the mechanisms that may be used to help them attain their objectives.

There is ample precedent in the professions, it seems to me, for the acceptance of larger social and political (as distinguished from partisan) obligations by professional conservationists. Doctors and lawyers, for example, have for many years used their professional organizations to

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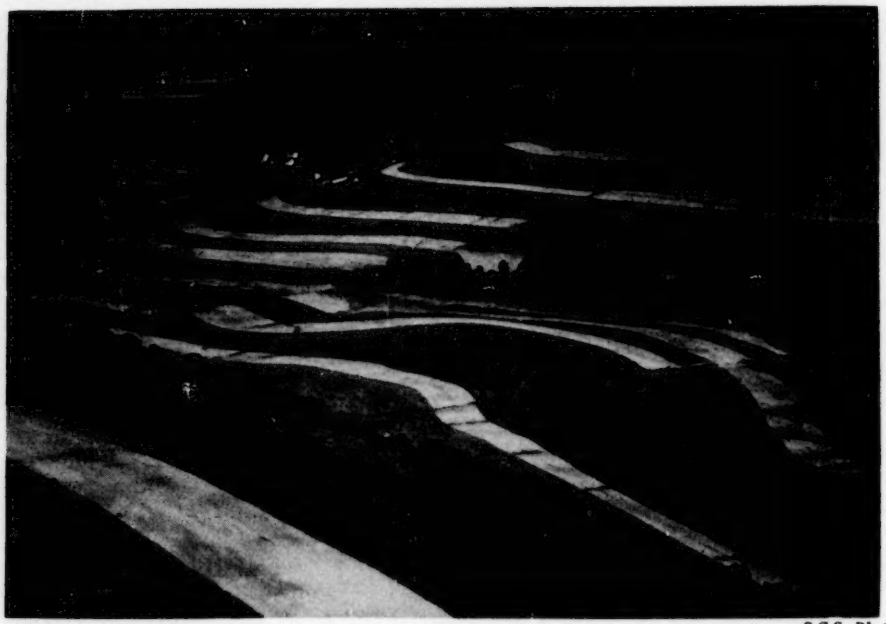
This address by Herschel D. Newsom was presented at the Annual Meeting of the Soil Conservation Society of America in Tulsa, Oklahoma, on October 15, 1956. Newsom is master of the National Grange, Washington, D. C.



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Conservation practices like these contour strips in Northumberland County, Pennsylvania, increase agricultural production. But such technological advances come slowly—too slowly to forever keep pace with our expanding population.

go beyond the consideration of specific, technical matters to the larger issues of health and justice in the nation—and into how to attain and protect these goals.

Let me be more specific about the estimate we have of the coming opportunities for professional conservationists.

The tremendous boom in our population has implications for the years ahead that have not yet been adequately appraised. Americans are setting new records for births. The number of babies in 1956 will probably exceed 4,150,000. Net annual growth in our population is approaching 3,000,000.

We read forecasts that in 10 years the number of births each year will be close to 6,000,000. By 1975, the experts predict that the population of the United States will be in the neighborhood of 228,000,000. This would be about 63,000,000 more than we have today—a gain of about 38 per cent in 20 years.

1,000,000 New Families

Perhaps most significant, economically, is the Census Bureau forecast that an average of 1,000,000 new families will be formed in the United States each year for the next 20 years.

New families create new demands and function as new markets. They want homes with furniture, carpets, and all the other goods that nowadays contribute to an American standard of living. They will require clothing and food—large and sustained amounts of both.

These new families will want to send their children to school. They will want automobiles, roads, libraries and hospitals. The demand for services of all kinds—in addition to material goods—will increase with an inevitable certainty. The more we have, it seems, the more we want. Probably this is just human nature.

The pressure will then be on our supply of capital, our resources, and our rate of technological progress. The pressure will be to divert capital and resources away from increasing productive equipment per worker and consumption per capita—to provide the sustaining capital and goods needed for the enlarged population. In other words, our money and resources are likely to be spread thinner.

Under these circumstances, the cost of raw materials is likely to increase, both in the case of renewable and nonrenewable resources. Incidentally, Dr. Albert Burke of Yale University reminded us recently that the United States is already importing 73 raw materials from 53 countries to meet the demands of our population.

I do not mean to suggest that we are all on a fast train roaring downhill without brakes toward some kind of disaster. Neither do I intend to infer that we as farmers are willing to abdicate or are anxious to ignore our responsibilities as stewards of the soil. But I do mean to emphasize, as firmly as I can, the unyielding compulsion that we step up the rate of technological progress in the months and years immediately ahead.

Technological progress of the kind that develops new and more efficient ways of using our renewable natural resources is vital if we are to offset the pressure ahead. This progress must produce more per unit of resource with fewer man-hours of labor and at a lower cost per unit.

All of us know that this kind of progress is not achieved

swiftly. As I understand it, the development of nylon took 13 years and cost $20,000,000.

Closer to home, we can ask ourselves how long it has taken to arrive at our present levels of soil and water conservation technology. How long did it take to develop the broad-base terrace and get it into widespread application? How fast are we progressing with land capability mapping—and in the use of land capability information by farmers themselves? How fast are we progressing with improved techniques for irrigation and drainage?

Expect Research Miracles

I am aware, of course, that many people around the country today regard this combined resource-production problem almost casually. They point to our present surplus stocks of cotton and wheat. They have faith that new hybrid grains and new, improved strains of livestock will come along whenever needed. There are those who derive reassurance from the spread of sprinkler irrigation.

I suppose it is true that we could, if we were forced to it, farm up one side of the Appalachians or the Ozarks and down the other. But the task isn't one of proving to ourselves that we can force production from the most unlikely land under the most difficult conditions.

Isn't it crystal clear that such production is enormously high-cost production? Obviously, we can't go on and on adding to the cost of production per unit.

Our task is to use our land more selectively, improve our soil productivity, and adopt farming techniques that will *reduce production* costs. Even if there were no impending increase in the demands for production, the challenge here to professional conservationists would be clear.

There is a compelling need now—and in the years ahead—to whittle away at production costs in every way that will relieve by even a little bit the cost-price squeeze that is hurting farmers everywhere.

This, as a matter of fact, is a second great opportunity confronting the professional conservationist. Income to American farmers is a matter of prime concern. For quite awhile, as you know, they haven't been getting enough of it to sustain an American level of return on labor and investment. Everybody with real agricultural interest, therefore, must seek to close the price-cost gap.

Overly intensive use of some farm lands is one long-term factor contributing to higher costs of production. Lands unsuited by nature for sustained cultivation have, in some circumstances, been brought into crop production. I am confident that the application of labor and machinery to this kind of land can only add generally to relatively high cost production.

Overcropping, as we all know, can invite erosion and deplete the organic content of our soils. In turn, these

Improvements in irrigation equipment are increasing the efficiency and cutting the labor requirements of irrigation in many areas. This, in turn, cuts the cost of crops produced under irrigation.

S.C.S. Photo

losses in original productive capacity prompt the farmer to add more fertilizer or buy expensive irrigation systems, adding to the high cost of production per unit.

Are professional conservationists doing all they can to help the nation avoid such mistakes—or to help recover from past mistakes?

We are moving into the first full crop year of the Soil Bank Program. This program was authorized for the stated purposes of conserving our soil and reducing production of certain crops now in surplus.

From the standpoint of the professional conservationist, does the present program have real promise of fulfilling its conservation goals? How could it be improved to do a better job?

Get Most From Taxes

Many of us who are not professionals suspect that helpful refinements could be made. The Soil Bank is a nation-wide program affecting the whole pattern of our agriculture and it is going to cost all of us, as citizens, a large amount of money every year for quite awhile. We ought to be getting the best results that can be obtained from this program and from this tax money.

Where better can we turn, for judgment and recommendations about the soil conservation parts of the Soil Bank, than to the top professional conservationists of the country? Your considered opinions are needed—and wanted.

Professional conservationists were instrumental in developing the specialized Great Plains Program, which was authorized at the last session of Congress. *It is one of the most promising programs yet developed because it is designed to bring about basic and potentially lasting improvements in the agriculture of the Great Plains.*

It is designed to bring about the progressive adjustment of land use to greater conformity with scientifically-determined land capabilities. It is designed to coordinate in a practical, purposeful way a whole array of federal, state, and local programs in the fields of education, credit, research, insurance, and technical assistance. It is a voluntary program. Although the Federal government has already decided to encourage action with economic incentives (states may add further economic incentives), the program depends primarily on education, on technical know-how, and on good common sense.

There is nothing in the Great Plains Program, as we understand it, which would serve to perpetuate wasteful or damaging use of resources. On the contrary, the implementing or supplementary programs (such as crop insurance, credit, and ACP) have been specially modified to contribute to the aims of the over-all Great Plains Program.

Duplicate Great Plains Plan

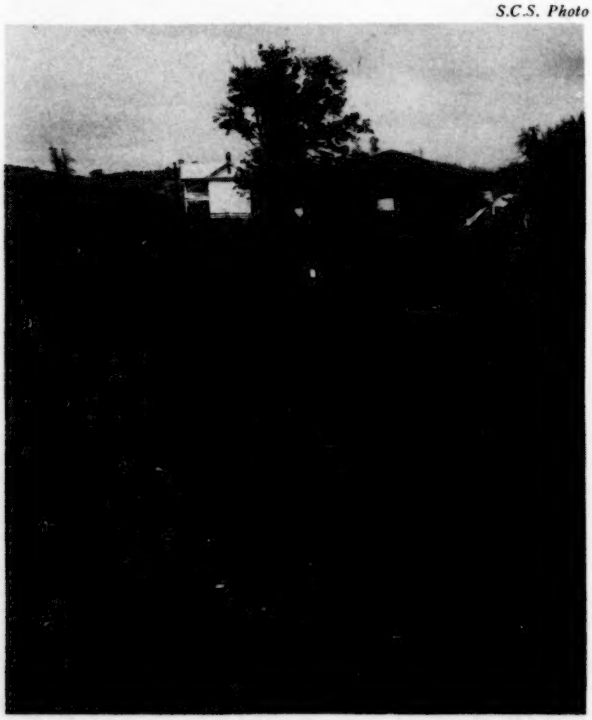
When you think about it, these are revolutionary facts. I'm not sure that the same set of circumstances can be found in any other farm program or in any other part of the country.

If this Great Plains Program is as good as we think it is, why shouldn't it be duplicated—with suitable modifications—for other parts of the country? We think the members of this *Society* are in a favored position to help answer this question.

It has become customary in the United States, because we have been so richly endowed with land and water suitable for agriculture, to take these resources almost for granted. As a nation, of course, we probably have these resources in greater abundance than any other. But in terms of the individual farmer, it is clear that serious shortages can exist.

I am thinking now, in particular, of the small Southeastern farmer who is trying to make a living on his comparatively few acres while big changes are taking place in the agriculture all around him. For the past generation, or more, this farmer has been primarily a cotton producer, growing a few bales per year with hand labor and very little capital investment.

S.C.S. Photo



The need for good soil conservation practices can be seen clearly here. Note the drill rows up and down the slope forming channels for the swifter runoff of the rains. A diversion ditch, sod waterways and contour strip cropping would be recommended for this badly eroded field.

S.C.S. Photo

The production of most permanent pastures can be at least doubled by renovation. Nine cows on this excellent Idaho pasture could not keep it eaten down so fifteen cattle were put on it part of the time.

The returns from the cotton were not large, but neither were the demands of the farmer and those who helped him. They got along.

But now there are changes. The best cotton market is for the longer staples. Cotton production is being mechanized. There is wider use of chemicals and machines to protect and improve the crop. There is soil conservation to think about. And in the farm home there are new requirements of our day—electricity, radio, a washing machine, maybe a television set and some other appliances. The family wants what has come to be called an American way of life and living.

At the same time, taxes on the farm have gone up. It costs money to borrow money. Fertilizers cost money. So do gasoline and insecticides.

High Standard of Living

Can the same few acres which produced a "living" a generation ago produce enough to support today's higher standards of living and higher costs of farming? You know the answer to that question. It is "No." There is another question. Is the land being used properly for crop production, or is it better suited for the production of livestock and forage?

What I am talking about now, of course, are some of the ingredients necessary to make a farm an "economic unit" by the standards of this decade and the next. Certainly one of the first requirements is that the farm under good management shall be composed of enough land of sufficient quality to produce a decent living after expenses.

Some of our family farms clearly need more acres if they are to support an American standard of living for their owners. There are other family farms where the total acreage may be large enough but where greater diversification may be called for—especially in the direction of more livestock and forage and away from emphasis on crops like wheat and cotton.

The whole question of farm income and the preservation of the family-sized farm is so linked with the extent and use of agricultural land and water that professional conservationists should be able to contribute much in these fields.

If family farms need to be enlarged in order to enhance their operations as economic units, how can land be added with the greatest assurance of success? Is some variation of the Great Plains Program the answer? Would completion of the land capability survey be the big key? Your views on the relationship of resources and the family-sized farm, whatever they are, would be welcome and valuable.

I want to mention briefly just two more areas of opportunity for professional conservationists.

All across the country these days we are witnessing a tremendous suburban development. Our growing population, aided by the highest level of personal income in American history, is moving steadily outward from our cities and towns to build homes in the countryside.

Often these homes are built on half-acre or acre lots. Others involve from five to 15 acres or more when the

owners decide to grow fruit, a family supply of vegetables, or to keep chickens or a cow.

As suburban development has taken place, however, it has served to shrink the acres of land devoted to full-time agriculture. In some thickly populated sections of the Northeast, for example, this suburban growth seems likely to do away with actual farms altogether.

Ownership Pattern Changing

The land and water are still there. The problems of erosion and water management are still present. But the land ownership pattern is changing. Under these circumstances, how should we proceed with the conservation job?

Should we take the position that conservation is strictly an agricultural undertaking? Or do we need to develop new procedures and new techniques for dealing with non-agricultural ownership of large tracts of our countryside?

Soil conservation district laws, in some states, as I understand the situation, limit the functioning of districts to cooperation with bona fide farmers. Under these circumstances, the authorization for these districts might usefully be broadened.

This is certainly one of the real and practical resource problems of our times. And again I say that the judgment of conservationists would be valuable.

Watersheds and Water Supplies

The development of watershed programs in our country has so far been regarded as an almost exclusively agricultural affair. In predominantly rural areas, there is obviously good reason for this approach because most of the watershed lands are owned by farmers and they receive a sizeable share of the benefits.

But let us again direct our attention to the more thickly settled parts of the country and particularly to those sections where more and more full-scale farms adjoining towns are being split into small subsistence farms or into subdivisions for home building.

Isn't it inevitable that a way must be found to bring these non-agricultural owners of watershed lands into the watershed program? Isn't it inevitable that a way must be found for a greater degree of cooperation, and joint participation, of farmers and non-farmers in our watersheds?

It would be a judicious move from every aspect if these non-agricultural owners who stand to benefit so much from the protection and development of their immediate watersheds could be made full and active partners in the enterprise. The big question is, "How?"

Here again we could profit from the considered judgment of conservationists.

Pioneer New Paths

This *Society* can, if it will, help pioneer new and necessary paths for the people of our country. There is no myth in the statement that we are adjusting ourselves to our resources. The pressures of a generally prosperous population and our great industrial development require it.

In this situation, the conservationist has a vital role to play. *You can help lead, if you will. It is your prerogative.*

Land like that shown here is probably suited only for limited agricultural use. Often land owners need to be guided toward proper use. This is just one of many challenging opportunities facing the conservationist.

Impact of Urban and Other Development on Agricultural Land

FRED W. HERBERT

Fred W. Herbert

A year ago, the San Francisco Bay Chapter of the Soil Conservation Society of America held five consecutive monthly meetings on the subject "Problems Caused by Converting Agricultural Land to Urban Uses." In a sense, this paper is a report of one chapter's activities for a season. And in this same sense, it offers this challenge to the officers of other chapters: "Have you done as much for your own members?" Every area has its own opportunity to do something along this line.

THE SHIFT of good agricultural land to urban uses is a growing problem in California. So the San Francisco Bay Chapter of the *Soil Conservation Society of America* decided to keep its members informed on the subject.

Three meetings were devoted to discussing the problem itself. Two follow-up meetings dealt with possible solutions.

The first meeting presented the views of the realtor and subdivider. Maurice G. Read, vice president of the National Association of Real Estate Boards and trustee of the Urban Land Institute, was the featured speaker.

Viewpoints Vary

Read pointed out that realtors recognize a responsibility to society with respect to wise use of land. "But the viewpoints of the realtor and soil conservationist may differ on just what is the wisest use of land," he emphasized.

Read's next point was this: From the best current information and predictions of future needs for housing, industry, roads and agriculture, it appeared that a shift of land use from agriculture to houses and industry was logical. The so-called surplus of farm products and the still greater farm production potential were the basis of such reasoning.

Read also spoke of "the economic influences of the market place." He said, "When land increases in value from a few hundred dollars per acre to five or six thousand dollars per acre, the natural law of supply and demand is in operation."

Then he deplored what he called the "hop, skip and jump" type of real estate subdivision. He said, "If, through strengthening of county or state zoning laws, residential development could be somewhat concentrated in the fringe areas of cities, much of the great land waste would be avoided.

"On the other hand, I don't think there is any fixed pattern whereby Grade A land should be preserved for agriculture alone. Or whereby marginal land should only be utilized for houses. I can't see such a pattern developing. Costs of building on hillsides is substantially higher than on the level land. That's particularly important if you are trying to produce housing at a low enough cost that young couples can afford to own a home."

The second speaker was Francis C. Lindsay, California State Assemblyman, who presented facts and figures on the land-water relations in connection with urbanization of agricultural land. He pointed out that when land changes from agricultural to urban use, there is an ultimate increase in water use, due chiefly to the needs of industry which usually accompanies urbanization.

Increased Demand For Water

The average domestic use of water is about 125 gallons per person per day. Industry, of course, uses a great deal more. Lindsay pointed out that there are some 400,000 new people coming to California each year. This population increase, along with associated industries, means a greatly increased demand for water.

The third speaker was John H. Keith, Chief, Division of Assessment Standards, California Board of Tax Equal-

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Fred W. Herbert is Assistant State Conservationist, Soil Conservation Service, Berkeley, California. *This paper was presented at the annual meeting of the Soil Conservation Society of America at Tulsa, Oklahoma, on October 16, 1956.*

ization. He emphasized that he was speaking from the standpoint of land appraisal and taxation. On that basis, diversion of land from agriculture to urban uses calls for a re-appraisal of the land. Land, like any other commodity, is restricted in use partly by its value in the market place. So zoning is not the concern of the appraiser. However, if zoning reduces or increases the value of property, the appraiser must take the change into account. Taxation results from value and is not a cause of value, he emphasized.

The fourth speaker started to deal with possible solutions. He was Karl J. Belser, Director of Planning for Santa Clara County, California. Santa Clara County and adjacent San Mateo County are directly south of San Francisco and constitute one of the largest areas intensely affected by urban encroachment on agricultural land.

Belser informed us that in 1952 the Supervisors of Santa Clara County adopted an amendment to their zoning ordinance to prevent 13 square miles of agricultural land from being subdivided.

"The problem then became one of maintaining this zoning," he said. "It was a problem of dealing with cities which were annexing territory in a wild and disorderly manner. The counties were totally unable to cope with a problem of this magnitude. So the matter was taken to the state legislature. After much patient work, one bill directed against the annexation policies of cities was finally passed. A proposed constitutional amendment to provide for the fair assessing of agricultural land based on what was on the land was defeated."

By using the information contained in *Know California's Land*[1] and data on the population distribution in California, Belser found that about one-half of the Class I to Class IV lands are in areas containing 90 per cent of all the people in California. These undoubtedly are the same areas which will receive the expected doubling of population within the next 20 years.

Development Not Orderly

If the population increases of the past 10 years had taken place according to some kind of a plan, we could have had both agricultural and urban developments in an orderly way. "The farmer," he said, "is very much concerned that he cannot do what he wants about continuing farming on his land; not because the government says he can't but because the assessor, the subdivider and the Chamber of Commerce say he can't."

In Santa Clara County, probably 40,000 acres have been zoned for agriculture. These areas have been referred to as "greenbelts."

The fifth and final speaker was William E. Spangle, Jr., Planning Consultant for San Mateo County, California. Mr. Spangle also stated that the problem was one of

[1] *Know California's Land, including Generalized Land Capability Map of California. A Land-Capability Guide for Soil and Water Conservation*, by Leonard R. Wohletz and Edward F. Dolder.

Warren S. Terriberry Photo

This aerial photograph shows the "fragmentation" of agricultural land caused by uncontrolled urban expansion near San Jose, California. Note that some orchards on this Class I and II land are now almost isolated by urban expansion.

planning the urban and rural areas together. "This," he said, "requires larger planning units than cities or counties. At state and national levels there is a responsibility for estimating future requirements of both kinds of land. Then there should be an evaluation of the total land resources suited for these purposes."

Along with this he felt that certain objectives should be spelled out, such as the relative need for conserving various classes of land under different conditions of climate, access to markets, and other factors. In all, he thought that a high degree of local government and initiative should be retained.

Summing up the five meetings in a few words, we were impressed more than ever by the bigness and complexity of the problem. On the constructive side, it appeared that zoning, based on local planning and some national standards, presented the best known solution. Long range planning *seemed most important.*

Long Range Planning in Israel

The importance of long range planning was further emphasized in the remarks of Ze'ev Vered, from Israel, a student member of our chapter, now taking post-graduate work at the University of California. Vered described drastic measures being taken in Israel. He stated, "There is such a very limited amount of arable land that we must conserve every square foot of it. We set up a program that included contouring, small dams, conversion canals and reclamation of swampy lands.

"Badly salted lands were turned into fishponds. These were filled with fresh water and brought a high income from the fish. After most of the salt was leached out, these became fertile areas for crops. In the hilly country, holes were actually gouged out of rocky land, filled with soil and fruit trees planted. More level rocky areas were sufficiently cleared of rocks so that they would support some plant growth. This was done by the use of tractor-drawn sleds on which the rocks were thrown and hauled from the area.

"A joint committee, representing all departments of the government concerned with state-wide land planning, was set up. A country-wide land-use capability map was made on which was delineated exactly what lands could be used and for what purpose. This joint committee determines on what land houses and factories may be built —lands that are poorest agriculturally. Agriculture comes first; industry, houses and roads come second."

"The Big Push"

Before these meetings of the San Francisco Bay Chapter, the *San Francisco Examiner,* during May and June, 1955, printed a series of articles by Will Stevens. They were brought together in a pamphlet entitled, "The Big Push." The "big push" was the way farmers were being pushed out by growing cities.

Mr. Stevens had compiled figures and cited many individual instances relating to this problem both in the counties adjacent to the San Francisco Bay area, and in the state as a whole. It was a formidable presentation.

To me, one of his most significant observations is one that may relate just as importantly to other parts of the nation as it does California. For this reason, I quote it:

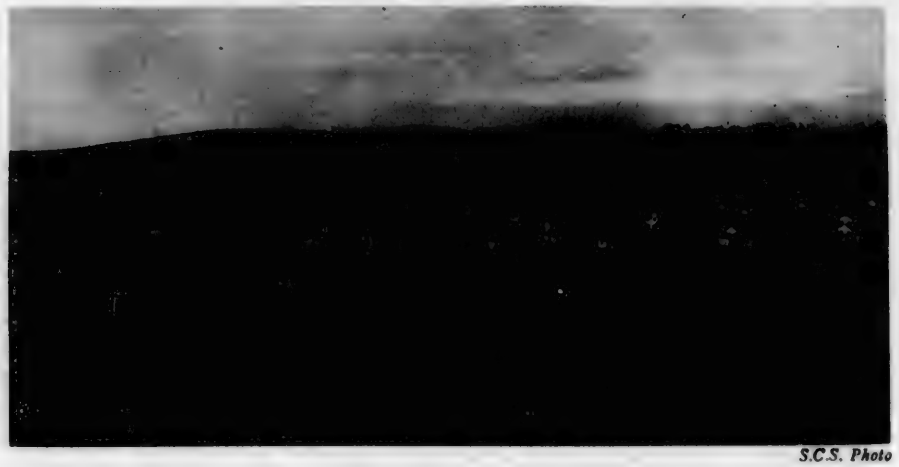
> *"There are one hundred million acres of land in California.*
>
> *"Of this total land area, 14 million acres are cultivated, including 7 million irrigated acres.*
>
> *"Every year since the end of World War II, approximately 40 thousand acres of farm and dairy land have been plowed under. Subdivisions have appeared on these lands.*
>
> *"Four hundred thousand acres erased in ten years from a potential of approximately 14 million cultivated acres seems a small bit, indeed.*
>
> *"What must be realized is that the impact of all this new residential construction has hit the state's farm lands with the same effect of a hammer smashing a pane of glass into thousands of fragments.*
>
> *"This change has not occurred on fourteen separate parcels of land, but in approximately 22,000 different parts of California, in every county, where that many subdivisions have been created in a decade."*
>
> *"Immeasurably more significant than the loss to agriculture of all this farm land up to this point is the fragmentation in the years ahead.*
>
> *"To the degree that additional subdivisions are created, those 'islands' of residences—peppering farm areas—create what farmers call 'zones of influence' around the subdivisions.*
>
> *"Invariably, these subdivisions expand. Farmers around the fringe of each new subdivision are offered high prices for their own land. If they sell—that many additional acres of farm land disappear."*

Lack of Planning

At the end of his pamphlet, Mr. Stevens states: "An assembly subcommittee said the situation is due to 'failure to foresee the implications of expanded population and economic growth.' That is lack of planning."

Assembly Bill 2166 states, "Any territory which is, by the consent of the owners, zoned and restricted for agricultural purposes exclusively, pursuant to a master plan for land use in any county, shall not, while it is so zoned, be annexed to a city . . . without the consent of the owners."

An editorial in the *San Francisco Examiner* of July 5, 1955, stated that this bill "gives the farmer a chance to decide if he wishes to surrender his land for rezoning and annexation to a city or retain it for continued farming. Heretofore, the farmer has had either to take a profitable



In Cantra Costa County, California, homes were built on good Class I bottom land leaving the steep Class IV land for agriculture.

S.C.S. Photo

sale of his land or face heavily rising taxes under the burden of annexation.

"Assembly Bill 2166 is the first step taken by the legislature to help correct the problem and start on the road to intelligent planning that will distribute the state's lands so there will be no cessation in the growth of population and no loss of the vitally important products of agriculture."

Other Areas Parallel California

This refers to California. So far as the United States is concerned, no doubt many *Society* members could add equally striking instances from other parts of the country.

In the October issue of the *Soil Conservation* magazine, D. A. Williams, Administrator of the Soil Conservation Service, brings together a great deal of evidence in an article entitled "Urbanization of Productive Farmland." He reports that a study made by SCS last year showed that every year more than one million acres of cultivable land in the United States is going into urban subdivisions, industrial sites, defense establishments, highways, railways and airports. *(Superhighways require 50 to 60 acres of land to the mile. Ordinary first-class highways require 25 acres or more.)* During the last 15 years, estimates show that approximately 17 million acres of our flattest and most fertile farmlands, in land capability classes I to IV, have been converted to such non-agricultural use. About three-fifths of this was in private development.

Lose 100 Million Acres

Mr. Williams stated that this represents almost three per cent of all land suitable for cultivation in the United States. He said, "If these withdrawals continue for another 15 years at the present rate—and the trend is slightly upward—a total of about 100 million acres of land that once was suitable for cultivation will have been converted to non-agricultural use."

Williams points out that in urbanizing an agricultural area, land that formerly absorbed a great quantity of rain water virtually has a tin roof placed over it. This changes the whole hydrologic pattern of watersheds and greatly increases flood hazards. The conservation, agronomic, forestry, engineering and associated problems are all intensified. I would point out that the hydrology is changed less if the urbanization takes place on Class V to VIII lands with poor, impermeable soils than on better, high moisture-holding soils.

This article in the *Soil Conservation* magazine will bear careful reading by all students of this problem.

Zoning Aids Available

If some form of zoning is a solution—and it appears to be the best one in sight—we have some dependable aids for the planners. One of these is the soils survey which, with its land capability determinations, is available as a guide to various groups that may be or should be working to protect our good farmlands for agricultural use. Another is the recently authorized national inventory of soil and water conservation needs which will furnish essential information bearing on the problem.

In chapter discussions, the question of the need for preventing urbanization of agricultural land in view of present crop surpluses, naturally arose. It appeared to some of us that Mr. E. A. Norton summed up this phase of the problem adequately in his article "Vanishing Crop Land" in the July, 1956, issue of the *Journal of Soil and Water Conservation*. He stated: *"Eventually, the food demands of our population will catch up with what can be produced on all our available farm land under present production methods. It is estimated that this will be during the lifetime of half or more of those of us now living. If both the rate of population and the rate of annual disappearance of crop land remain stable, the curve of increased consumption of food would cross that of total food production sometime before the year 2000.*

"What then—Well, we won't be going without some-

thing to eat, because increasing per acre yields, extending cultivation to lower producing lands, and introducing new sources of energy to agriculture will make enough food available. However, it will likely mean the passing of the age of comparatively cheap food in America. A plentiful supply of good but inexpensive food has contributed much to the rapid development of our nation as a world leader."

In our discussion of these problems, we do not want to give the impression that we are against urbanization—that it is bad and should be curtailed. The real concern is *where* urbanization should take place. The real problem is to preserve the more productive land for agriculture. Progress toward this end might be made by directing the growth of cities away from our best lands. Highways, for instance, could be located on the poorer lands which, in turn, would direct industry and urbanization to those lands.

What I learned from this series of chapter meetings is this: In the matter of urbanization of agricultural land, there exists much the same human influences of expediency and opportunism that underlie soil erosion and associated land deterioration. The physical results of urbanization, however, are different, and worse. Land deteriorated by erosion, poor drainage, deposition, and such factors can often be reclaimed. But the loss of land to agriculture when used for housing, factories and highways is practically complete and final. The end of a period of temporary agricultural surpluses may find too much good agricultural land covered by dwellings and factories. These will produce more tax revenue, but you can't eat a dollar bill.

If we run short of good agricultural land, we are not going to be able to eat the houses, industries and freeways that occupy that land. This, of course, involves a principle with which most of us are familiar. Agricultural land is *not* like any other commodity. Its ownership is a special kind of ownership, involving obligations as to its use. It is a right that carries a responsibility. This right and this responsibility must be shared by the individual and by government. Soil conservation district directors believe this. A pamphlet of their national association, just off the press, lists as one of their activities, *"to awaken our people to a realization that we are all stewards of the Lord's land."*

Right Incurs Responsibility

Here, I think, is a sharp challenge to all of us. This principle—*that ownership of productive land is a right that incurs responsibility*—will be translated into action only when a lot of people believe it. And a lot of people won't believe it until they know about it. No movement in this country will get very far until it finds general public acceptance. We all know that this has been true in the instance of soil conservation. I think it would be well for our *Society* to develop a plan of education to help inform the public on this subject throughout the nation.

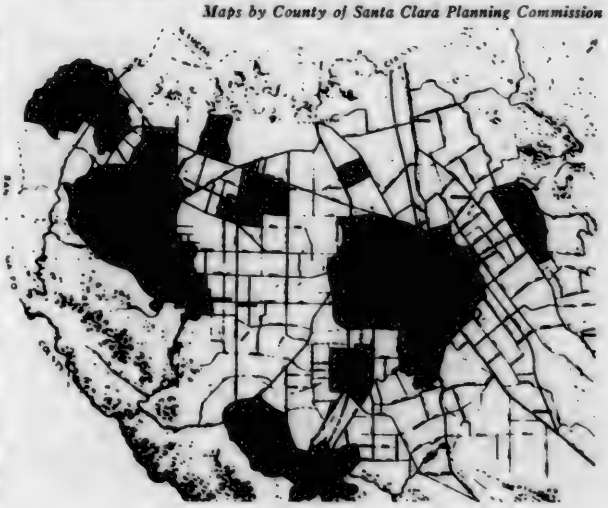
We have here a parallel to the soil conservation movement itself. It succeeded for two reasons. First, the idea of conserving our soil resources against erosion and other forms of deterioration was sound. Secondly, it was well publicized.

The idea of protecting our best agricultural land from urbanization is equally sound. It must be equally well publicized.

This is the pattern of urban development in Santa Clara County, California. Note the uncontrolled scattering of urbanized areas leaving unprofitable islands of agricultural land.

This is a hypothetical redistribution of urban development in Santa Clara County, California. With expansion concentrated around existing urban cores, agricultural land is left in profitable units.

Maps by County of Santa Clara Planning Commission



Colorado Water Users Are Working Together

J. SELBY YOUNG AND C. L. TERRELL

Realistic and practical policies for Colorado Watersheds are now being established by the people who use the land and water resources of the state. Further development and use of such resources will come from the most vitally concerned groups, represented by farm organizations, Soil Conservation Districts, municpal, industrial groups, irrigation and drainage districts, livestock associations, sportsmen and recreational interests, together with all related Federal and state agencies. Present and future watershed resource requirements needs and plans will be projected. An overall state watershed resources inventory will be taken as a basic source of information. The entire program is of a voluntary participation. Its educational importance is of wide-spread value.

Colorado's vast watersheds directly supply water to Kansas, New Mexico, Nebraska, Wyoming, Utah and Arizona, indirectly contribute water to California, Nevada, Texas, Oklahoma and the Republic of Mexico. The strengthening resource conservation on Colorado's watersheds constitutes not only Colorado's future development but is of life giving importance to millions of other Americans. The unification of interests of the people at the source is a task vital to the entire Western area.

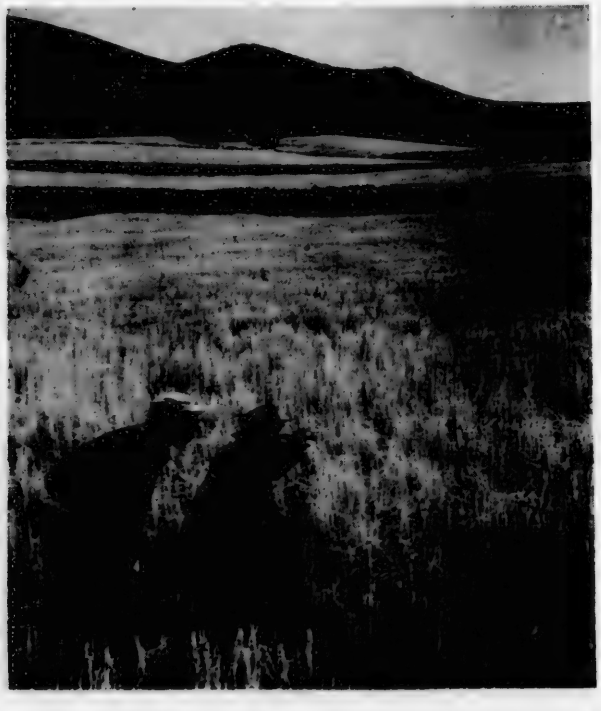
WATER PROBLEMS of Colorado have been the basis for conflicts, disputes, and legislative contests for more than one-hundred years. The history of water use in this state dates back to that period before the territory became a state. Colorado was the first to discard entirely the riparian system of water allocation and to adopt a pure appropriation doctrine. This doctrine of appropriation is based on the simple principles that the right to divert the unappropriated water of natural streams to beneficial uses shall never be denied, and that the one who is first in time is first in right. These principles have formed the basis for an irrigated agriculture which extends over more than three million acres of farm land in Coloado.

J. Selby Young, a member of SCSA, is a former district conservationist for the Soil Conservation Service in Colorado. He is now a rancher and farmer at Colorado Springs, Colorado. C. L. Terrell is former extension conservationist and now extension forester for Colorado A & M College, Fort Collins, Colorado.

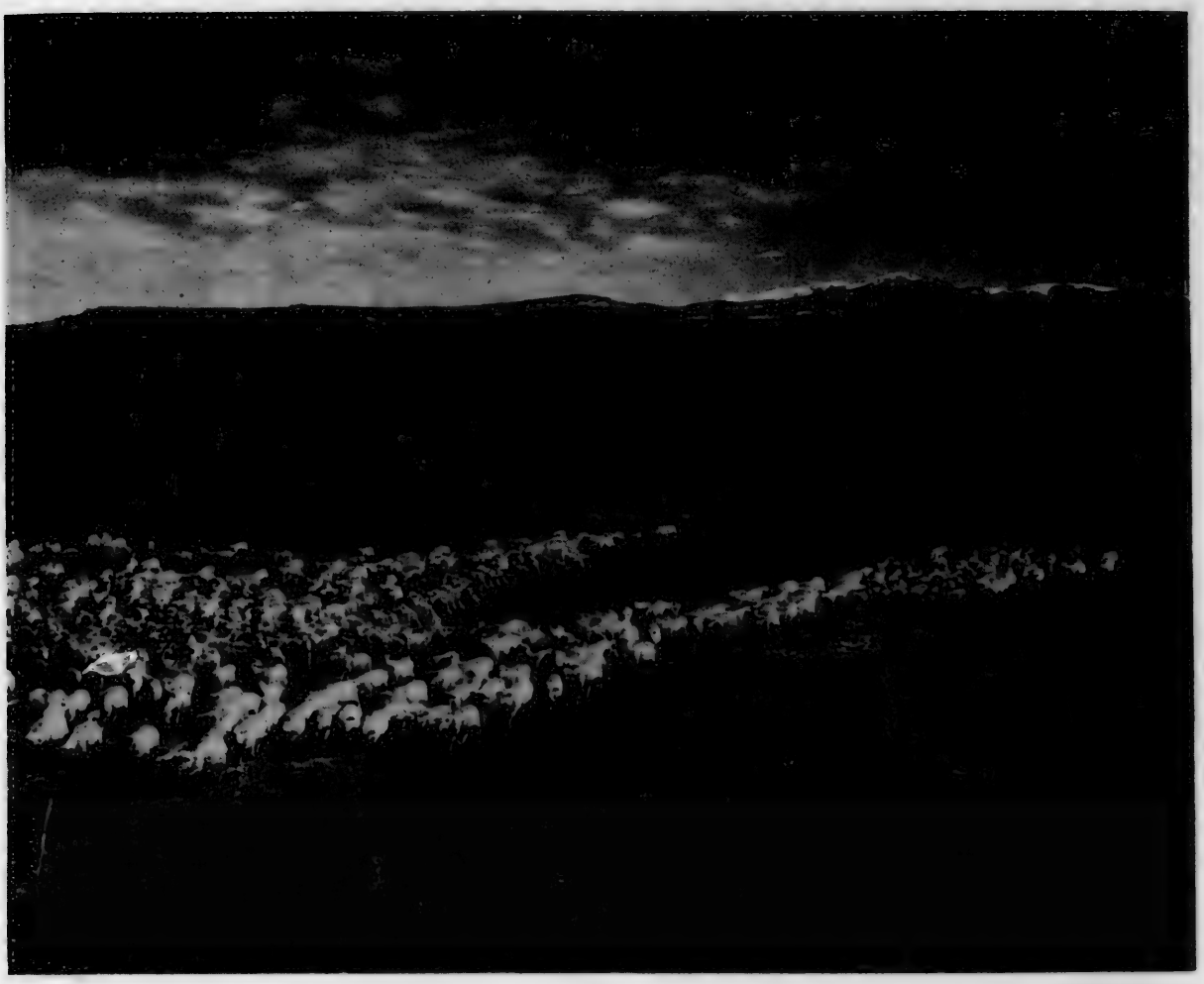
In the difficult situation facing Colorado the appropriation doctrine simply means that the right to use the water goes to him who diverts it and applies it to beneficial use. Under these circumstances there is no method or procedure through which a block of water may be reserved for future use. This constitutes an extremely serious situation with respect to the future development and use of Colorado's water resources. The difficulty with the appropriation system is that the race is always won by the swiftest.

Protect Individual Rights

In addition to the complexity of determining the water supply of the state, the difficulties of determining proper allocation of water, and the importance of protecting the individual water rights, there also exists the necessity for the people of the state to settle their differences over water. They must reach agreement over state policies, the needed changes to make it possible to use our water now



Farmers, ranchers and farm organizations cooperate with many other groups in the Colorado watersheds program. Their interest is in conserving water and using it as efficiently as possible. Careless use, for example, reduces the number of acres that could be irrigated.



No one knows the importance of adequate water supplies better than ranchers. They need a dependable source of water. Big problem in diversified areas is getting consideration for needs of others competing for limited water supplies.

and in the future to the best possible advantage, and to look to the future with a unified perspective.

The fact that Colorado contains such widely diversified topographical and climatic conditions further complicates the situation. The state is divided in half by the continental divide which extends from north to south through the center of the state. From the continental divide east the topography descends in elevation from over 14,000 feet in the high mountains to the foothills and from the foothills to the high plains area which is less than 4,000 feet above sea level.

Irrigated Agriculture

The plains section of eastern Colorado is broken by two large drainages. The Arkansas River flows from the mountains southeastward and the South Platte River flows out of the state to the northeast. In both of these valleys is found an irrigated type of agriculture. Waters from the two rivers are diverted out to the more level lands to be used as supplemental water for growing crops.

In south central Colorado, or in the Rio Grande Valley, another large basin exists in which there are problems unique to this particular section. Waters from the Rio Grande River are diverted out to agricultural land as supplemental irrigation water. In the northern part of the San Luis Valley or Rio Grande Basin there are tremendous underground water supplies. These supplies are being tapped by wells from which water is pumped, and applied to the land for the production of crops.

In southwestern Colorado or in the San Juan Basin, many streams originate in the mountains and flow southwest out of Colorado and ultimately in to the Colorado River. Here again, these streams support an irrigated type of agriculture along the stream courses. North of

Recreational uses of Colorado's water are considered whenever water problems come up for discussion.

U. S. Forest Service Photo

the San Juan Basin is the Colorado River Valley. The Colorado River, one of the larger rivers originating in the state, flows from northern Colorado southwestward into Utah and Arizona. This river not only provides irrigation water for agricultural lands along the stream course in Colorado but is of tremendous importance in supplying irrigation water to the so-called lower basin states.

In northwestern Colorado the Yampa and the White Rivers and their tributaries likewise support an irrigated type of agriculture. In addition to providing water for agricultural purposes these streams also supply the municipal, industrial, and recreational requirements in Colorado and the surrounding states.

Divided by Topography

The existence of six river basins each having their own peculiar problems, and the division of the state through the center by the continental divide has had an influence in dividing the interests of Colorado's people along topographic lines.

The annual precipitation which falls on Colorado amounts to approximately 99 million acre feet. Of this amount, a little more than 16½ million acre feet reach the stream channels and is available for use by agricultural, municipal, industrial and recreational interests.

In the face of all the above mentioned complexities the difficult problem of making the best use of our water supplies for the greatest number of people on the sustained yield basis has seemed to be almost insurmountable. The dependency of the people of the state upon an adequate water supply and the limited amount of water for use has served as the basis for the difficult situation which exists. The demand importance is now even more aggravated by rapidly expanding western development in Colorado.

Cooperative Plan Devised

Such problems cannot be entirely solved by legislative means. If the state is to prosper and expand its agriculture, industry, and cities, we must be able to look to the future with a unified perspective. Recognizing these difficult problems and the importance of solving them for the best interest of the state, the Colorado State Agricultural Planning Committee (a voluntary organization made up principally of farmers and ranchers) and the Colorado State Association of Soil Conservation Districts have suggested a course of action intended to bring the water interests together. Representatives of these two organizations spent approximately two years attempting to develop a plan whereby the water interests of Colorado could be brought together. As a result of these efforts, an acceptable plan was devised.

After preliminary planning was completed, the two sponsors solicited the cooperation of Colorado A & M

College in taking the proposal to the people. After discussion with President W. E. Morgan, of Colorado A & M College, and Mr. J. E. Morrison, Director of the Colorado Extension Service, it was agreed that the Extension Service personnel would take the proposal to groups of people throughout the state, discuss it with them, and give them an opportunity to reject the plan or accept it.

Water Users Federation

The proposed plan for action might well be called a federation of water users. The name chosen for the program was the Colorado Watershed Conservation Association. This plan involves the participation of all water interests from the county level to the state level.

Inventory Water Resources

Each county in Colorado was asked to bring together all the people interested in water problems. It is suggested that each county organization make an intensive study of the water resources of the county. Once the inventory of water resources is completed every effort be made to acquaint the people of the county with what the inventory shows. It is also recommended that the county committees begin planning for the future use and development of those water resources available to them.

Form Watershed Committee

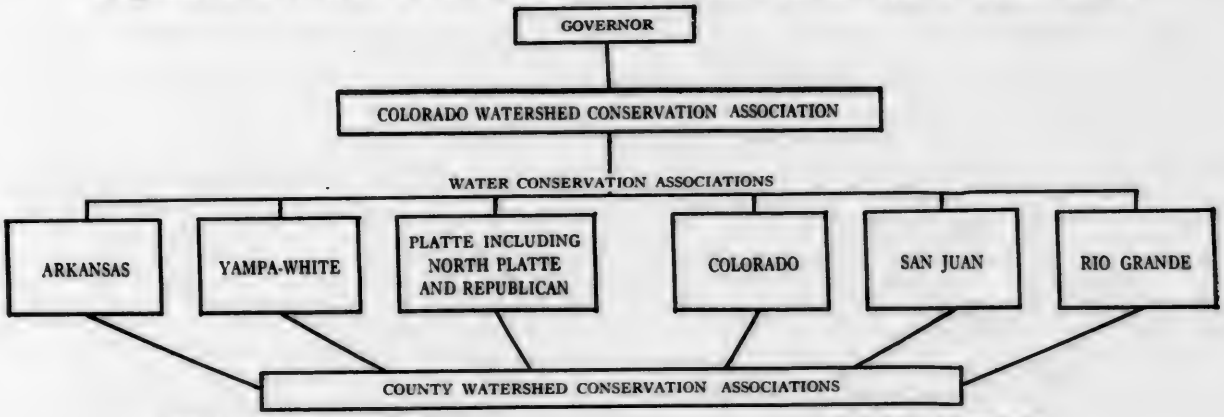
Once the county committees have been organized, it is then suggested that delegates be selected to represent the industrial interests, the municipal interests and agricultural interests, both livestock and cultivated farming, on a watershed committee.

Once the county delegates have been selected and the six basin-wide committees (see chart) have been organized, it is suggested that a similar type program be planned for the basin or watershed area, similar to the county. Furthermore, it was suggested that each of the six basins select delegates on the same basis from the watershed to serve on a state committee.

Serves Educational Need

This process of selecting delegates to the county committee, the watershed committee, and the state committee and the development of policies and programs are designed to serve an important educational need. It also provides an opportunity for all concerned to become ac-

Organization Outline of the Colorado Watershed Conservation Association



PRIVATE ORGANIZATIONS

Representatives of Municipalities

Representatives of Industry

Agricultural Interests
Irrigation and Livestock

Drainage Districts

Soil Conservation Districts

Livestock Associations

Farm Organizations: Farmers Union
Grange
Farm Bureau

Sportsmen's Clubs

Chambers of Commerce

County Commissioners

PUBLIC AGENCIES

Water Conservation Board

State Game and Fish Department

Colorado A&M College

Soil Conservation Service

Forest Service

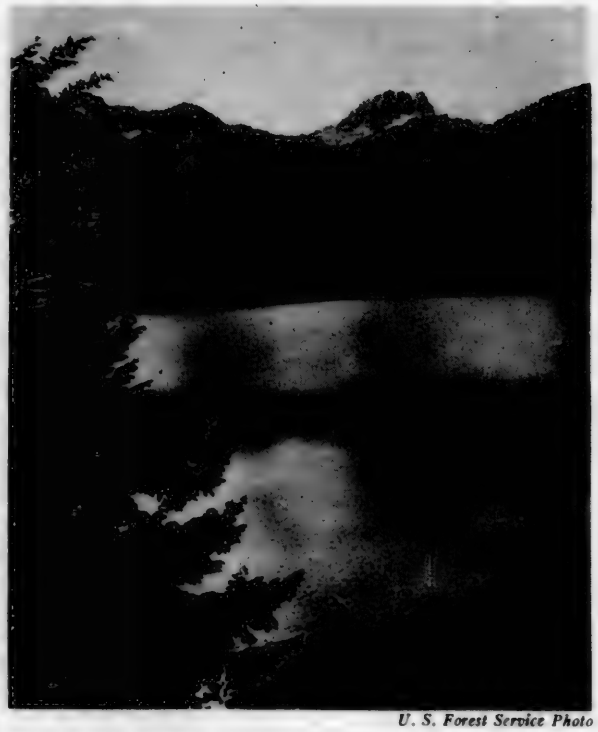
Bureau of Reclamation

National Park Service

Army Engineers

State Engineer

(One representative of each to serve as advisor.)



Colorado's water supply is of interest to tourists and businesses that serve the state's booming tourist trade. Lakes like this are one reason for vacations in Colorado.

U. S. Forest Service Photo

quainted with the state water resources, their allocation and use. All interested groups will have a place to participate in water problems, to become acquainted with problems of other areas, and to have a part in working out solutions to these problems. Those who use the resources will have an opportunity to participate in the preparation of the policies for use, allocation and development of the states water resources. This is an outstanding "first" within Colorado.

Cooperate With Agencies

Colorado is the only state, of the seventeen western states, that does not have such an organization. This plan, if carried out, can provide an excellent opportunity for the users of the water to work closely and cooperatively with those public agencies having the legal responsibilities to administer the water laws and programs of the state.

Forty-four counties have organized water committees and are now in the process of developing county-wide programs. The six basin committees, composed of delegates from the counties, have been organized and have selected their delegates to serve on the state-wide watershed conservation association. The public agencies involved have not only endorsed the idea but have agreed to cooperate fully in carrying out the proposed program. The organization of the state-wide body is only the first step toward the achievement of this goal. The development of a practical program will require all of the counsel, advice and vision that such a group might possess. Without such an organization, however, it is doubtful that the interests of the state would ever be brought together in a unified program. Unless Colorado is to meet this challenge and solve it wisely, the welfare of the state and its people will be seriously jeopardized.

★ ★ ★ ★ ★

Congressman Anderson Challenges Society

Here are a few excerpts from an address by H. Carl Anderson, Congressman from Minnesota, in accepting honorary membership in the Society at the annual meeting, Tulsa, Oklahoma, October 16, 1956.

"The land itself offers the only prospect for permanency. By teaming man and Nature in a combined effort to stabilize and improve land resources, we can hope to leave something worthwhile which time and tide will not erase. We call this teamwork soil conservation, and surely the work that you are doing upon the face of this good earth will achieve greater immortality than anything else that has thus far been accomplished."

" . . . . . the broader view extends the horizon of our influence into the cities and factories of our land. We are rudely awakened to the realization that water is as essential to progress as good soil is to sustenance. The greatest limitation upon industrial and commercial growth in many parts of this nation is the available supply of water for industrial use and human consumption. The water they need to sustain them falls first upon our rural lands, and we are its guardians. Because the supply of water is as strictly limited as the acres of arable land, we must give increased attention to the benefits which will accrue to urban centers and industry through proper husbanding of our dwindling water resources."

Conserving Our Farm Forests

JOHN F. HOSNER

Author's Note: The following article does not discuss techniques for applying conservation practices. However, it covers the need for such practices as related to farm woodlands and points out a program for encouraging greater farm woodland conservation. Soil conservationists can help much in furthering this program. At the same time, implementing this program should provide a more receptive environment for the technician to put his training into practice.

FARM WOODLANDS asume an important place in the conservation picture of the United States because they occupy more area than any other group of commercial forest holdings (7). Their importance is magnified because they occupy the type of land that requires more intensive conservation practices.

According to the Soil Conservation Service's inventory of 1944, as summarized by Preston (6), 104,000,000 acres of the total 137,000.000 acres in farm woodlands are located on Class IV or poorer land (according to Soil Conservation Service land capability classes). This means that woodlands, for the most part, are located on sloping land where cover is most beneficial. In addition, the same report listed 33,000,000 acres of eroded and abandoned fields and unprofitable pastures considered better suited for timber growing.

For this land to serve in stabilizing soil and water conditions it must be managed according to good conservation practices. This means that generally it should be kept in a productive condition because the decimating agents, such as uncontrolled fires, over-grazing, and destructive logging that lower production, also lower the value of the forest as a soil and water conservation aid.

The recent *Timber Resource Review* (7) indicated that farm woodlands are not being kept productive. It showed that farm woodlands have the lowest productivity index

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Fires destroy young trees, injure older trees and result in severe loss of organic matter and minerals. Subsequent erosion often causes heavy loss of top soil. This fire is in a stand of heavily-cut hardwoods.

This stand of hardwoods was selectively cut five years ago. It is now ready for the next cutting. Note heavy growth of seedlings and saplings. Little loss of soil or water here.

of all major classes of private land ownership. Of the three classifications used—upper, medium, and lower—only 41 per cent of all farm woodlands was rated in the upper productivity class. This compared unfavorably with 73 per cent for lumber companies, 84 per cent for pulp companies, 73 per cent for other types of wood manufacturing companies, and 52 per cent for all other private holdings.

Twenty-two per cent of farm woodlands was rated in the lowest productivity class. Thus, the need for a higher level of farm woodland conservation can be seen. However, to think in terms of a higher level of farm woodland conservation we need to define more clearly what we mean by conservation.

What We Mean by Conservation

Conservation of farm woodlands does not mean nonuse. Nor does it mean keeping use constant over time. This would simply mean keeping unproductive woodlands unproductive.

Probably the most useful definition of conservation is the one proposed by Ciriary-Wantrup (1). He defines conservation as a comparison of the use of a resource, such as timber, over two or more periods of time. Thus, conservation is relative. The comparisons take account of the amount of changes and how these are distributed over a time interval. The more distant the future in which use is maintained or increased by a given amount, the greater the degree of conservation. Conversely, the nearer to the present a given amount of use is shifted, the greater the degree of depletion and the lesser the degree of conservation.

From this definition we can see that a farmer can conserve his forest resources by putting off cutting immature trees or stands of trees so as to realize greater future returns; or he can conserve his forest and forest land resources by expending present effort or costs without reducing use. The latter may consist of improvement cuts or plantings which intensify the degree of forest management.

It is of utmost importance to realize that, from the standpoint of the individual farmer, forest conservation has an economical limit. Conservation practices must be profitable for him. Hence, the problem of increasing the degree of conservation amounts to finding ways to make a higher level of conservation of our farm forests desirable from an economic standpoint.

Major Obstacles to Forest Conservation

Some of the major handicaps to increasing the degree of forest conservation of our farm forests are as follows:

The average holding in the United States is small in size, averaging 49 acres (7). For such a relatively extensive type of enterprise as forestry, small woodlands tend to be economically inefficient. The inherent disadvantages militating against more conservative timber on these small forests have been listed this way by Duerr (3):

a. Because of the small size holding, timber assumes a minor role on the farm.
b. In most cases, the farmer is unfamiliar with timber products and timber markets and generally can devote only a brief time to timber marketing.
c. Because of the small quantities of each product, small owners cannot always channel them into the best markets.
d. Small owners cannot afford to own efficient harvesting equipment.

2. Coupled with the small size of holding is the tendency for farming to become specialized. As specialization becomes more prevalent, woodlands will be managed more and more extensively because the small-size woodland generally cannot become a major source of income even under more intensive management. Consequently, the tendency is to specialize in more intensive type enterprises, or enterprises with more acres. The result is increasing neglect of the forest area.

3. Of paramount importance in raising the level of farm forest conservation is the need for adequate financing. This is especially true where the forests have been depleted and time is required to build up the growing stands.

Unfortunately, with few exceptions, loans are not available for timber growing, and private capital is lacking because a large portion of our woodlands is located in areas having low family or per capita income brought about by socio-economic maladjustment.

According to Duerr (2), there are major areas in the Appalachian and Ozark regions plus sizeable areas in the Lake States, the Piedmont and the West where there is maladjustment in the primary use of land, such as using it for tilled crops instead of pastures and forests. Even in fairly stable farming areas, we find scattered units of land where adjustments of enterprises and economic units are needed before the degree of forest conservation can be increased.

Wherever these areas of maladjustment occur, we tend

This farm woodland was destructively cut. If followed by uncontrolled burning or over grazing, complete destruction of forest value is certain.

to have a low state of forest conservation because the need for present income is so great the farmers cannot follow a more conservative forestry program even though they may realize that harvesting small trees at the present may reduce the possibilities for increased returns from larger trees in the future. The same principle, of course, applies to the over-grazing of timber, especially hardwood areas. Current low forage values are taken in lieu of greater future returns from timber.

4. This latter statement points out another important obstacle to farm forest conservation—education. Probably most farmers do not realize the amount of future income they are sacrificing by carrying on destructive practices in their woodland holdings. Small merchantable trees often are cut when they are making from ten to fifteen per cent return and the money put into uses giving a lower rate of interest than that obtainable from the trees left standing.

5. Another problem of forest conservation deals with the divided returns from conservation decisions. In a broad sense soil and water conservation benefits from forests are of greater value to the general public than to the timber owners. Most timber is located in the uplands while the majority of land suffering from ravages of floods and siltation is valley land. In other words, the farmers who make the conservation decisions do not receive all the benefits. Usually only those benefits they receive directly can be taken into consideration when making conservation decisions.

Ways to Increase Forest Conservation

To overcome some of the handicaps listed above, it is recommended that emphasis by conservationists be placed on the following:

1. Education. Although education perhaps is sometimes over-stressed, it is logical to assume that farmers must be well informed before they can intelligently make decisions concerning methods of managing their forests.

Even under present conditions, if more farmers were only aware of the losses occurring from many present practices, particularly excessive overcutting, they would find it feasible to practice more conservation.

2. Larger holdings. The problem of small uneconomical holdings can be improved by encouraging consolidation of holdings into economically more efficient units. Consolidation could be accomplished in many ways; for example, through outright purchasing by individuals with available resources, through long term leases covering at least the rotation of the timber crop, or through timber growing and marketing cooperatives. The latter, while still leaving the holdings in small ownership, would give the group of owners the competitive advantage of size in marketing their products.

If holdings were sufficiently enlarged, the forest enterprise could easily become one of the major areas of specialization on individual farms. If such were the case, specialization by the farmer could very well be an asset rather than a detriment to forest conservation. Also, timber loans would probably receive more favorable consideration from larger, more stable ownerships.

3. Research. Increased emphasis on all phases of forestry research is needed to improve its competitive position on the farm. Technology in agriculture has raised the output per man-hour from 1910-1948 by 75 per cent (4). Yet, due to decreasing size and quality of timber being harvested on the farm, it is doubtful if the output per man-hour in producing forest products on the farm has even held its own.

4. Public help. To offset the problem of divided returns, consideration by conservation groups should be given to a policy of increased public aid to the woodland owner. Since the public receives much of the returns from soil and water conservation, it is only logical that the public should pay that part of the costs from which it gets the returns.

The Federal Government through the Agricultural Conservation Program currently shares the cost of many conservation practices such as tree planting, fencing out livestock, and improving farm woodlands, but the funds available seem inadequate. Generally, farmers use their allotment of these funds to increase production of the more intensive farm enterprises.

5. Regulation. Coupled with public aid some form of control should be set up, perhaps on the order of the self-regulation Nelson (5) described for California. Regulations drawn up by a committee of local timber owners and owner-operators are proposed. Upon approval by two-thirds of the timber owners the regulations have the force of law. This type of democratically instituted regulation would help to protect the public's investment in the conservation of farm forests.

Summary and Conclusion

It has been pointed out that farm forests constitute the largest single category of commercial forest land in the United States and that most of these forests are located on land classed as IV or poorer according to the Soil Conservation Service land capability classes. Generally speaking, this constitutes the types of land where soil and water conservation should be emphasized. Yet, according to the Forest Service's *Timber Resource Review* (7) a smaller percentage of farm woodlands is classed in the upper productivity level than of any other major ownership class.

Before pointing out the obstacles to more intensive conservation, it was defined as a relative term denoting a

comparison of the use of a resource over two or more periods of time.

The major obstacles to farm forest conservation were then listed as follows:

1. The average farm holding is too small to be economically efficient to promote conservation practices.
2. Coupled with the small holdings is a tendency toward specialization in farming. This specialization in enterprises capable of yielding higher returns from the overall farm standpoint results in neglect of the farm woods.
3. Farmers often do not have finances to allow them to defer cutting. Low per capita and per family incomes encourage destructive cutting.
4. Lack of understanding concerning tree growth often results in cutting high income-producing trees.
5. Individual farmers usually do not receive all the returns from following conservation practices. Soil and water conservation benefits accrue chiefly to the public.

The following ways to increase forest conservation were outlined:

1. *Educating farmers to the losses of income from overcutting.*
2. *Research in all phases of producing, harvesting, and marketing farm woodland products.*
3. *Encouraging some form of consolidating farm forest holdings.*
4. *Increasing aid for the farmer carrying out farm woodland practices chiefly beneficial to the society as a whole.*
5. *Regulating use practices to those proposed by timber owners and owner-operators and subject to approval by the majority of farm forest owners.*

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Heavy grazing eventually destroys a farm woodlot. Note the lack of seedlings and saplings. And note poor pasture production shown by thin cattle.

Soil Conservation Society of America
Philosophy and Objectives

The Soil Conservation Society of America is dedicated to the promotion and advancement of renewable natural resources conservation to the end that water, soil, grass, forests, and wildlife, in abundance, may be used and enjoyed by mankind forever. The Society is founded on the knowledge and belief that these renewable resources are indispensable to the support and growth of strong, prosperous, free nations; that they are interrelated and interdependent — inseparable one from the other; and that their everlasting abundance is dependent on the development, coordination and proficient application of the several arts, sciences, and professions dealing with the promotion of good resource management. Toward the early attainment of this goal, the Soil Conservation Society of America pledges the direction of its energies and facilities.

The objectives of this Society shall be to promote and advance all phases of the science of conservation of soil and water resources; to provide a medium for the exchange of facts, experience, and thoughts; and to represent, advance, and protect the standards of the basic and allied sciences of soil and water conservation. Specifically, this Society will:

1. Champion the several arts, sciences and professions that have to do with the conservation of our renewable natural resources in such a manner as to encourage sound formulation of the best possible system of land and water management within land and water capabilities and the principles of multiple use.

2. Vitalize understanding of the need for conserving our renewable natural resources to the end that conservation becomes an intimate part of the thinking, doing, and living of city and country people alike.

3. Foster more intensive study of the means by which greater skill in the management of land and water can be developed and put into practice as rapidly as possible.

4. Strive for early adoption of high ethical standards on the part of all those who are professionally engaged in the furtherance of improved use of land and water.

5. Work with other conservation agencies and organizations in support of their recognized resolution and purpose.

6. Work for the early adoption of a long-range, country-wide land and water policy as a guide to all agencies, organizations and individuals in their renewable resource conservation activities.

7. Proclaim noteworthy achievements by individuals, agencies and organizations that have assisted in the development of sound concepts and practices in land and water use.

8. Provide a continuing medium for joint consideration of and undertakings in movements designed to foster more effective consideration of renewable natural resources.

9. Publish and encourage publication of constructive literature that will aid in the development of improved concepts and practices in conservation.

10. Work for an enlarged research program designed to contribute toward a better understanding of the means by which more effective conservation methods can be developed and put into practice.

11. Promote rapid development of improved educational programs on conservation in elementary and secondary schools, in colleges and universities, and in adult education fields.

12. Inspire public recognition of the urgent need for a complete country-wide inventory at the earliest possible date so that more rapid progress may be made in getting more land used within its capabilities.

13. Strive for rapid understanding of concepts of the importance of world-wide conservation of renewable natural resources as one of the most important steps toward permanent peace.

14. Augment the concepts of conservation so they include not only better use of soil, water, grass, forest and wildlife resources in the economy of the world, but aesthetic and human values as well.

Revised September 15, 1955.

Goals for 1957

Every member is asked to review the revised Philosophy and Objectives of the Society (opposite page). During the past year a committee studied ways and means to implement the new objectives. At the recent Tulsa meeting their report was reviewed and the following specific goals were adopted so all members may strive for their accomplishment prior to the 12th annual meeting at Asilomar Beach State Park, Pacific Grove, California, August 28-31, 1957.

Goals

1. The employment of a full time editor for the JOURNAL OF SOIL AND WATER CONSERATION.
   a. A full time editor will mean better service and an improved publication.
   b. The editor will serve as an information officer of the *Society* and assist the executive secretary with the national program.

2. The development of a national awards program.
   a. A regional chapter achievement award will be established recognizing the best chapter activity in each region. The individual most responsible will also be recognized.
   b. A national chapter award will be made from the regional winners with recognition also going to the individual most responsible.
   c. The *Society* will adopt a special individual recognition service award for unusual contributions to the *Society*.
   d. The *Society* will seek ways and means to activate the "American Prizes in Conservation," a program previously adopted but requiring substantial financial support.

3. During 1957 the *Society* will place special emphasis on water and allied problems. Continued emphasis will be given to the diverting of agricultural land to non-agricultural use. Chapters may adopt similar programs.

4. Through the national council, national office, and more than thirty active committees, the organization will provide assistance to chapters in developing effective leadership and molding public opinion in support of conservation needs. The *Society* will work toward a conservation code of ethics both for the professional conservationist and for the public at large.

5. During 1957 the *Society* plans to publish several booklets.
   a. A booklet on water to be worked out by a special publications committee.
   b. A pamphlet providing vocational guidance information for students and others interested in soil and water conservation or related fields.

6. The *Society* will continue to work through its committee on International Relations to foster the development of soil and water conservation throughout the world.
   a. The *Society* will carry out its obligation under the contract with the International Cooperation Administration in providing membership to foreign conservationists eligible under the program.
   b. The *Society* will join the International Union for Conservation.

7. During 1957 the Archives Committee will arrange for the collection and filing of many "early-day" papers relating to soil and water conservation. Photographs will be collected and tape recordings made for use by historians.

8. It is planned to establish a Development Fund whereby money can be solicited for major *Society* programs including:
   a. Recognition awards.
   b. Publication of monographs and other special documents.
   c. To provide *Society* representation at International Conservation meetings.
   d. To provide scholarships in the field of soil and water conservation.
   e. To prepare special movies and other educational material.
   f. To finance special projects and publications.

9. The *Society* will continue to represent the membership on the Natural Resources Council of America, the Joint Committee on Grassland Farming, the American Association for Advancement of Science, the Scientific Manpower Commission, and at other meetings and with groups relating to the land use field.

10. It is the goal of the *Society* to reach a stable membership of 8,000 during 1957.

How Management Affects the Economics of Building Up a Run-Down Farm

R. H. BLOSSER

Many people working in soil conservation have had a lot of experience helping build up run-down farms. They know it can be a long tough battle for the farmer who undertakes the task. In this article, the author chooses a southeastern Ohio farm as an example and shows just how difficult the job may be from an economic standpoint. As you would expect, good management proves all important.

MANY ARTICLES have been written on how to restore productive capacity of farms with badly depleted resources. But few studies have stressed the importance of management in making these programs a financial success.

The purpose of the following discussion is to summarize briefly a study designed to determine the profitability of building up the productive capacity of a run-down farm in southeastern Ohio. In this study detailed consideration was given to the following items: (1) Annual receipts, expenses and net income for the period of time needed to maximize farm earnings, (2) fixed and operating capital needed to make the necessary improvements, and (3) level of management required to finance the soil building program out of farm earnings.

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Description of the Farm

This farm consisted of 120 acres of hill land on which soil depleting practices had been followed for more than 25 years. No mechanical measures such as terracing or contour strip cropping had ever been established. Fertilizer applications on rotated crops averaged only about 50 pounds per acre per year for the last 10 years. Practically

Building up run-down land in southeastern Ohio usually requires establishment of contour strip cropping where corn is grown. Heavy applications of lime and fertilizer are needed for corn and permanent pasture.

no lime had ever been applied to the cropland. Since soils were too acid to grow legumes, timothy was the principal meadow crop.

Soils maps showed that Muskingum and associated types predominate on this farm. These soils are roughly representative of about 15 millon acres of land in southeastern Ohio, southern Indiana and the northern parts of Kentucky and West Virginia. Slopes usually range from about 10 to 30 per cent. Muskingum soils are unglaciated and have developed from sandstone and shale. They are acid in reaction except where liberal amounts of lime have been applied recently. Maps also showed that cropland on this farm had lost over one-half of the original topsoil. Sheet erosion caused most of this loss; but a few shallow gullies existed where water concentrated as it ran down the slopes.

Approximate yields per acre were as follows: corn—35 bushels, wheat—18 bushels and hay—1.0 ton. Permanent pasture yields also were low because no lime or fertilizer had even been applied to this crop. Although soil productivity had been badly depleted, buildings for livestock were still in fair condition. Also, the farm house could still be used without making major repairs. Fences were average to poor. But no major clearing of brush was needed on either the cropland or permanent pasture areas.

Profits from this system of farming were low. For example, with average cows (7,000 pounds of milk) and manufactured milk prices ($3 per hundred pounds after deducting hauling charges), labor would receive only about $.50 an hour if no interest were charged on capital invested. But if a four per cent interest charge were made, this figure would be reduced to about $.20 an hour (based on 1950-54 farm prices and production costs).

Method of Study

Receipts, expenses and net income for rebuilding the productive capacity of this run-down farm were calculated by the method commonly called farm budgets. This procedure was used so that all factors could be held constant except the ones under consideration at a particular time. Actual income data would not have given satisfactory figures because many changes in farming could have occurred along with the establishment of a soil improvement program.

In recent years, farmers have adopted many practices that have no relationship to maintaining or improving soil productivity. Therefore, these practices must be held constant by designed experiments or farm budget calculations, if the economic aspects of soil improvement programs are to be evaluated properly.

Capital requirements, livestock numbers, labor needs and net income were calculated for 30 different farming situations. Six different levels of milk production and five different milk prices were used in making these computations. For each situation, calculations were made for a 13-year period which was long enough to cover three complete crop rotations. Observations indicated that this length of time should be sufficient to obtain most of the benefits from the soil improvement program.

Dairy cows were selected to utilize the hay and pasture because this type of livestock prevails on many southeastern Ohio farms. Beef cattle and sheep were not considered because they would require more than 120 acres to use all of the labor of a full-time farmer. Hogs were selected to consume the corn not used by the dairy cows. A small flock of poultry might have been considered, but this enterprise was omitted to simplify calculations. One or two hundred hens would not have changed conclusions significantly. Poultry would only have substituted for some of the hogs because both are principally grain consuming animals.

Crop Production Data Used

Acreages used in calculating crop production were as follows: corn—12, wheat—14, meadow—34, permanent pasture—36, and woods and miscellaneous—24. These acreages were determined from land capability classes used locally to develop cropping programs to control erosion and improve soil productivity. Contour strip cropping was considered necessary to control erosion with this amount of grain acreage.

Yields used in calculating total crop production on the rotated land are shown in table 1. These yields are based on studies of more than 100 hilly farms having Muskingum soils. About two-thirds of these farmers were following most of the soil conserving recommendations. The remainder could be rated poor from the standpoint of soil conservation.

Yields in table 1 are based on the use of contour strip cropping and heavy applications of fertilizer and lime. Therefore, they are considerably higher than the yields obtained under the system of farming that depleted soil productivity. Fertilizer applications for improving the cropland averaged 250 pounds per acre per year. Initial applications of lime were four tons per acre; maintenance applications were one ton every four years.

TABLE 1. Crop Yields Used in Calculating Production for the Soil Rebuilding Program

CROP	ROTATION			
	First	Second	Third	Fourth
Corn. bu.	50	58	62	65
Wheat bu.	22	24	25	26
Hay, tons	1.0[1]	2.0[2]	2.5[3]	2.8[3]

[1]Timothy only.
[2]Red clover and timothy with some alfalfa.
[3]Alfalfa, clover and timothy.

Rotation pasture yields were based on the type and amount of hay assumed to be raised. The carrying capacity of permanent pastures was determined from experimental data based on using heavy applications of lime and fertilizer. Three tons of agricultural limestone per acre were used for the initial application followed by one

ton every four years. Fertilizer applications were 600 pounds every three years.

Ohio livestock feeding standards were used in figuring the amount of livestock that could be kept on the feed assumed to be produced. Dairy cows were calculated to increase from 10 to 20 during the 13-year period. With low producing cows, enough corn should be available to feed about 28 hogs each year during the 13-year period because yields should increase enough to supply the needs of the additional animals. But with high producing cows, hog numbers should decline from about 25 the first year to 12 in the thirteenth because of heavier grain feeding per cow.

Time Required to Pay Costs of Improvement Program

Calculations in table 2 show the number of years required before annual cash receipts from the soil building program will exceed annual expenses including charges for labor and interest on capital invested. With a milk price of only $2.50 per hundred pounds, cash receipts would never be great enough to pay labor and capital average rates if production per cow is less than 10,000 pounds. Also, if the price of milk is $3 per hundredweight the same will be true if production per cow is below 7,000 pounds.

With average management (7,000 pounds of milk per cow and $3 net per hundred pounds for manufactured milk) about 12 years would be needed before annual cash receipts from the soil improvement program would exceed annual expenses including charges for labor and interest on capital invested. If all capital were owned by the farmer and no interest charge were made for the use of it, this figure could be reduced to about seven years.

With top grade management (10,000 pounds of milk per cow and $4 net per hundredweight for grade A milk), only about four years would be required before annual cash receipts would exceed annual expenses. If no interest were paid on capital, this type of farmer could allow himself more than the average farm wage rate after the first year.

TABLE 2. Years Required Before Annual Cash Receipts From the Soil Rebuilding Program Will Exceed Annual Expenses Including Charges for Labor and Interest on Capital Invested.[1]

(Based on Different Milk Prices[2] and Production Levels per Cow)

Average milk production per cow	Years required when price of milk per hundred pounds is				
	$2.50	$3.00	$3.50	$4.00	$4.50
6,000 lbs.	[3]	[3]	10	8	6
7,000 lbs.	[3]	12	9	6	5
8,000 lbs	[3]	10	8	5	4
9,000 lbs.	[3]	9	6	4	4
10,000 lbs.	13	8	5	4	4[4]
11,000 lbs.	12	7	4	4[4]	4[4]

[1]Expenses include a charge of $ .75 an hour for labor plus the use of a house and four percent interest on all capital invested. Farm prices and production costs used in making these calculations are averages for the period 1950-54.

[2]3.5 percent milk after deducting a hauling charge of $ .35 per hundred pounds.

[3]This combination will never pay labor and capital average rates out of farm earnings.

[4]These figures are higher than the corresponding ones in table 3 because of the way inventory increases were handled. In table 3 increases in inventory were included in gross receipts. In table 2 only cash receipts were considered as farm income.

Less time would be needed if credit were given to annual increases in inventory values of livestock and soil resources. Although inventory increases raise value of farm assets, they were omitted in the preceding calculations because they could not be withdrawn from the farm business to pay current operating expenses or used for family living. However, they could be used as a basis for borrowing additional capital.

Calculations in table 3 show the number of years required before the soil building program will pay for itself

This photograph shows a typical unimproved permanent pasture on run-down land in southeastern Ohio. During the season of peak production, it takes about four acres to handle one animal unit. Renovation can easily double production of pastures like this.

TABLE 3. Years Required Before Soil Building Program Will Pay for Itself Out of Farm Earnings.[1]

(Based on Different Milk Prices[2] and Production Levels per Cow)

Average milk production per cow	Years required when price of milk per hundred pounds is				
	$2.50	$3.00	$3.50	$4.00	$4.50
6,000 lbs.	[3]	[3]	25	14	10
7,000 lbs.	[3]	45	15	10	6
8,000 lbs.	[3]	25	12	7	5
9,000 lbs.	[3]	15	9	5	4
10,000 lbs.	75	12	7	4	3
11,000 lbs.	35	10	5	3	2

[1]Expenses include a charge of $ .75 an hour for labor plus the use of a house and four percent interest on all capital invested. Farm prices and production costs used in making these calculations are averages for the period 1950-54.

[2]3.5 percent milk after deducting a hauling charge of $ .35 per hundred pounds.

[3]This combination will never pay all costs out of farm earnings.

out of farm earnings. With a milk price of only $2.50 per hundred pounds, farm earnings would never be sufficient to pay all costs of the soil improvement program if production per cow is below 10,000 pounds. Also if the price of milk is $3 per hundredweight the same will be true if production per cow is less than 7,000 pounds. This conclusion is based on the assumption that labor would be paid $.75 an hour plus the use of a house and capital invested would yield four per cent interest.

With average management (7,000 pounds of milk per cow and $3 net per hundred pounds for manufactured milk), about 45 years would be needed before the soil improvement program would pay for itself out of farm earnings.

With top grade management (10,000 pounds of milk per cow and $4 net per hundred pounds for grade A milk) only about four years would be required before all expenses of the soil improvement program could be paid out of farm receipts. In these calculations, annual increases in the inventory value of livestock and soil resources were included in gross receipts. Top producing cows and grade A milk prices produced about twice as much gross income as low producing cows and lower grade milk prices. But total farm expenses for the better cows and grade A milk were only about 15 per cent greater.

This study showed that even after the soil improvement program was completely established, average dairy farmers would not be able to pay themselves much more than customary farm wages and average interest rates on capital used.

How then could an average farmer finance the practices and operations needed to restore the productive capacity of a run-down farm? He might do it by using his own capital on which no interest had to be paid. He might use some off-farm income to support the family during the first few years of the rebuilding program. At that time labor requirements would be about 1,000 hours less than needed in the thirteenth year. Also, family living expenses might be reduced to the minimum for a few years.

Preceding figures should not be interpreted to mean that soil conserving practices will not pay for themselves. However, they do show that if average farmers deplete soil productivity to extremely low levels they will have considerable difficulty financing the rebuilding program out of farm earnings. This will apply especially if capital must be borrowed because most lending agencies require interest and principal payments each year after loans are made. Most farmers can easily finance a soil conserving program out of current farm receipts. But a reclamation program, similar to the one described in this study, presents an entirely different set of problems.

This photograph shows improved permanent pasture in southeastern Ohio. One animal unit will require no more than two acres of this kind of pasture during the season of peak pasture production.

Land Inventory and Land Requirements in the United States

H. H. WOOTEN AND J. R. ANDERSON

This paper is intended to describe briefly the use of land for agriculture and the possible effect of the growth of our population on land requirements. It includes an explanation of special relationships and how they came about. To explain these relationships, a brief account is made of significant changes in land use that are in progress and in prospect, and of some of the factors that affect them.

CHANGES in land use and population growth are so interrelated that it is difficult to describe and evaluate them properly. However, we have brought together some significant facts and projections that indicate possible trends in land requirements under certain assumptions as to productivity, employment, income, consumption and population during the next 20 to 25 years. These facts are taken from recent studies of land use, long-term prospects for agriculture, and land-capability surveys made in the Department of Agriculture, and from population studies of the Bureau of the Census (see list of references).

Land inventories show that the land which comprises the continental United States is made up of many different kinds.[1] Roughly, three-fifths of the total area of land in the continental United States, or 1,158 million acres, is in farms, and two-fifths, or 746 million acres, is not in farms. Nearly half the land not in farms, or 353 million acres, is used for grazing. But much of this large area is publicly owned and is used jointly for other purposes, including forests, wild game preserves, watersheds to supply water for irrigation, power, and other uses.

Depth and fertility of the soil, slope of the surface, elevation, vegetative cover, water supply, length of growing season, productivity, and value of the land of this country all vary widely, thus affecting the use made of the land. Changes in the demand for field crops, livestock, timber, and other products and services that affect relative profitability have influenced decisions as to the use of land at different periods.

Economic considerations should be emphasized as a major factor in the past abandonment of much cropland and its reversion to forest in the East, the conversion of grassland to cropland in the Central states and West, and the clearing of forest land for cultivation in the Lower Mississippi Valley and in certain Coastal Plain areas.

Crops, Pastures and Forests Compete

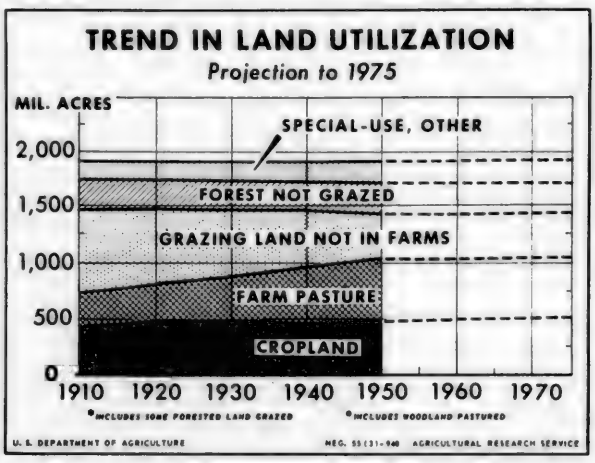
Theoretically, crops, pastures and forests compete for specific areas of land on the basis of comparative income. At times, this competition may be significant, particularly on millions of acres in the South as between cultivated crops, high-grade pasture and use for timber. Even on the fertile prairie soils of the Midwest, pasture is profitable on considerable acreages of high-grade land. But ordinarily, from a broad national viewpoint, crops have first choice wherever they pay best. Pasture, or grazing uses, and forests are usually the residual claimants.[2]

Crops and pasture, however, are complementary uses, in that they contribute jointly to production of livestock products and they are capable of more or less interchangeable use in the process. The area of land used for

[1] For definitions of land in farms refer to: *United States Bureau of the Census, 1956. United States Census of Agriculture, 1954.* 3 Vols. Washington, D.C.

H. H. Wooten and J. R. Anderson are Agricultural Economists, Production Economics Research Branch, Agricultural Research Service, USDA, Washington, D. C. *This paper was presented at the annual meeting of the Soil Conservation Society of America at Tulsa, Oklahoma, on October 17, 1956. The paper reflects the views of the authors and does not necessarily represent the views of the Production Economics Research Branch, ARS, or USDA.*

[2] Johnson, V. Webster, and Barlowe, Raleigh. *Land Problems and Policies.* 422 pp. illus. McGraw-Hill Book Co., 1954, pp. 196-228.



pasture in production of livestock products may be greatly reduced by using supplementary feed produced on arable land, or vice versa. Therefore, pasture requirements are somewhat less absolute than are those for arable uses.

Expanded Demand

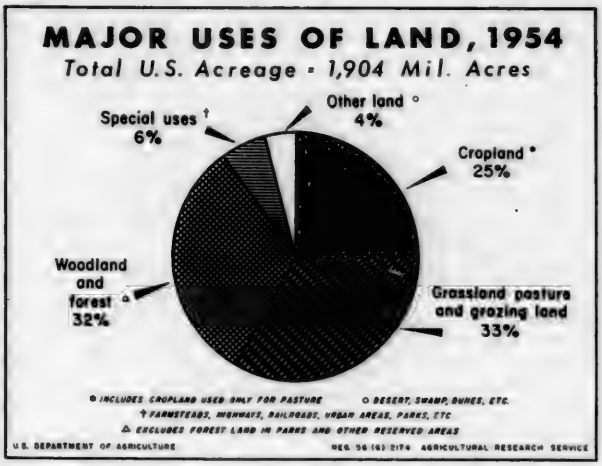
Growth in agriculture depends primarily on expansion in demand for farm products. Growth of population will contribute much to demand for agricultural products in the next two decades. This paper assumes a population increase of about one-third from the 1951-53 average to 210 million people by 1975. This compares with a range in Bureau of the Census 1953 projections of 200 to 221 million.[3] According to 1955 studies by the Bureau of the Census, if population continues to grow as rapidly as in recent years, by 1975 the population could well be at the high of the range projected by the census in 1953, or 5 per cent greater than the foregoing estimates.

At present, development of crop and pasture land is encouraged somewhat by shifts of farmland to use for living and working space for the growing non-farm population. Areas occupied by cities, towns, parks, airports, reservoirs, highways, and other special uses have increased greatly since 1910.[4] The average rate of absorption of land into these special intensive uses recently has been about a million acres per year, of which about one-third each is estimated to be cropland, pasture, and woodland. Thus, over a long period, competition may again become keener among cultivated crops, pastures, and forests for the lands needed to supply the increasing demands for agricultural and forest products.

Cropland and Pasture Resources

A fourth of the land in continental United States is cropland and a third is permanent pasture and grazing land. The rest is covered with forest, or it is in miscellaneous other uses. In round numbers, the present distribution of the cropland and pasture area of the country is as follows: Cropland 465 million acres, including 399 million acres used primarily for crops, and 66 million acres used for pasture in rotation with other crops; with 633 million acres in grassland pasture and range. The grassland pasture is exclusive of 301 million acres of woodland, which is pastured at certain seasons.[5]

With the growth of population and the somewhat greater demand for farm products, moderate shifts from pasture and forest to cropland are expected in the next two to three decades. If recent trends continue in the next 25 years, some 20 to 30 million acres of permanent


MAJOR USES OF LAND, 1954
Total U.S. Acreage - 1,904 Mil. Acres
Special uses †
6%
Other land °
4%
Cropland *
25%
Woodland and forest △
32%
Grassland pasture and grazing land
33%
° INCLUDES CROPLAND USED ONLY FOR PASTURE
° DESERT, SWAMP, DUNES, ETC.
† FARMSTEADS, HIGHWAYS, RAILROADS, URBAN AREAS, PARKS, ETC.
△ EXCLUDES FOREST LAND IN PARKS AND OTHER RESERVED AREAS
U.S. DEPARTMENT OF AGRICULTURE
NEG. 56-163-2174 AGRICULTURAL RESEARCH SERVICE

grassland suitable for cultivation likely will be brought into the cropland-pasture rotation. In addition, possibly 10 million acres of fertile farm woodland and brushland likely will be cleared for cropland and rotation pasture, chiefly to improve the layout and add to the tillable acreages of existing farms in the farm-forest regions.

Trends in Land Improvement

Thus, with continuation of recent trends in land improvement, the total acreage of cropland, including rotation pasture or cropland used for pasture, might be in the neighborhood of 500 million acres by 1975, as compared with 465 million acres in 1954. While these trends indicate a larger acreage of improved pasture, the total area of pasture and grazing land might remain about the same as at present, as a considerable acreage of pasture likely would be shifted to rotation pasture in the cropland rotation.

Close competition from forestry as a profitable farm enterprise likely would discourage large-scale clearing of good commercial timberland for pasture. Other sources of increased pasture acreages are non-commercial forest land, idle and wasteland. However, these areas frequently need expensive improvement to make them suitable for pasture.

This projection of cropland and rotation pasture acreage is based on trends in the last 15 years and on planned land improvement and reclamation developments. More land would be available for development if it were economically desirable. It is a question of the relative economy of alternative ways of increasing output—by use of more land—or by higher yields per acre.

Cropland Suitable for Regular Cultivation. Land-capability estimates of the Soil Conservation Service in 1949 showed that 388 million acres of cropland in that year were in land capability classes I, II, and III. This land is suitable for regular cultivation with proper farming

[3] U. S. Bureau of the Census, Current Population Reports, Population Estimates, Series P 25, No. 78, August 21, 1953 and No. 123, October 20, 1955.
[4] Wooten, H. H. *Major Uses of Land in the United States.* U. S. Dept. Agr. Tech. Bul. 1082, 100 pp. illus. 1953.
[5] Wooten, Hugh H., and Anderson, James R. *Agricultural Land Resources in the United States—With Special Reference to Present and Potential Cropland and Pasture,* U. S. Dept. Agr., Agr. Inform. Bul. 140, June 1955.

practices under good management.[6] Another 49 million acres of cropland was class IV land, which is severely limited as to possibilities for cultivation. Most of it is suitable only for occasional cultivation in longtime rotations.

In addition, 40 million acres of land in classes V, VI, VII, and VIII, or about 10 per cent of the presently cultivated cropland, are not suitable for use as cropland. This land is too steep, too eroded, too stony, or otherwise poorly adapted to cultivated crops. Thus, of the presently cultivated cropland, 80 per cent is adapted to full-time cultivation, and 10 per cent can be cultivated to a limited extent if suitable precautions are taken.

Overall Shifts from Grassland and Woodland to Cropland. As indicated by the land-capability estimates, some 215 million acres, or more, in pasture, range, and woodland in continental United States are physically capable of improvement and planting to cultivated crops, with longtime rotations and good care in management. Of these, more than 110 million acres are open grassland pasture and grazing land, most of which is in farms.

An additional 105 million acres of potential cropland are in woodland, about half of which is in farms. Most of the rest is privately owned. Much of it was once in farms, but it has been allowed to revert to woodland in various stages because of competition with newer lands. Shifting woodland to cropland would reduce the acreage available for woodland production just as the shift from grassland to cropland would reduce the acreage of pasture.

These estimates of grassland and woodland capable of use for crops are the potential additions for agriculture, based on physical capability of the land to stand up under cultivation, especially from the standpoint of erosion hazards. It is not suggested that all land physically suitable for cultivation should be used for cultivated crops, as a balanced enterprise on many existing farms requires use of some lands in classes I, II, or III for pasture and woodland.

Changes in Systems of Farming

Development of suitable permanent pasture and farm woodland as cropland and bringing it into the rotation normally takes several years. Plowing of pasture and clearing of woodland and use for cultivated crops would reduce the acreage available for pasture and woodland products. It would substitute one kind of production for another, and some changes in the systems of farming followed in different regions would be required.

Moderate shifts of suitable areas of grassland pasture and farm woodland to the cropland rotation, however, are physically feasible and possibly desirable in the case of many individual farmers, especially those who have suitable unimproved land and who have too few crop acres for reasonable farm incomes, if the conversion is spread over several years. Experimental tests and farm trials have shown that rotation pastures produce more forage than permanent pastures, and that at the same time they result in increased yields per acre of other crops in the rotation.

Shift of Cropland to Grassland and Woodland. Partly offsetting the potential shifts of grassland and woodland to cropland are 40 million acres of cropland which the Soil Conservation Service has classified as best suited to grassland and woodland. Thus, the net potential shifts in land use from grassland and woodland to cropland which appear to be physically feasible are about 175 million acres. Much of the shift from grassland and woodland to cropland when it occurs should be to replace necessary conversions of poor cropland areas to grass and trees.

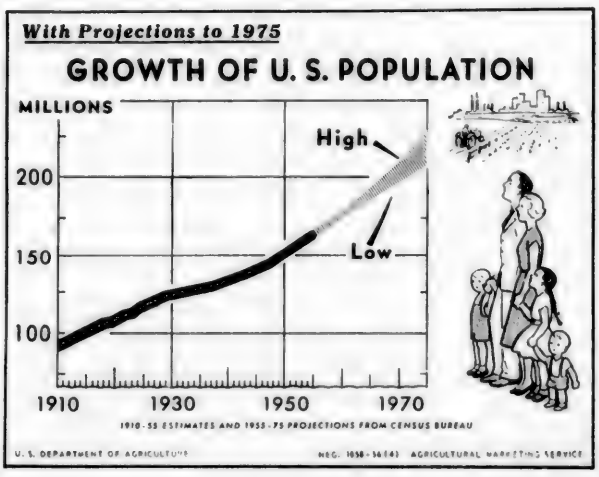
Soil Bank

In reviewing potential shifts in land use, mention should be made of the soil bank program. The conservation reserve part of the 1956 soil bank program provides encouragement for the shift over a period of years of 20 to 25 million acres of cropland to grass, trees, or water storage. This would be a long-range adjustment in the use of some of the nation's land resources.

A temporary withdrawal from crop production of another 20 to 25 million acres, or more, is possible under the acreage reserve part of the soil bank program. The acreage reserve is a temporary program designed to reduce the current production of certain crops that are in large supply. Thus, transfer of some 40 to 50 million acres of cropland to other uses or to a standby status is possible during the next few years.

Requirements for Agricultural Products

In 1954, the volume of farm marketings and home consumption of agricultural products in the continental United States was about 50 per cent more than the 1935-



[6] Revised data from the land-capability estimates made by U. S. Soil Conservation Service in 1948-49, adjusted slightly to the total acreage of cropland reported by the U. S. Census of Agriculture in 1950. A partial summary of these data and definitions of the land classes appeared in the President's Materials Policy Commission Report in 1952.

S.C.S. Photo

Some land suitable for crops will be kept in pasture to balance the enterprises on some farms. In many of these cases, improved pasture returns as much as crop land.

39 average. Civilian per capita food consumption in 1954 was 12 per cent greater than in 1935-39, while the indications for 1956 are that it will be 14 per cent greater than this base period. Much of the increase in demand for agricultural products thus can be attributed to the growth in population from an average of 129 million persons in 1935-39 to 162 million for 1954 and 168 million in 1956. The median projected estimate of population for 1975 is 210 million.[7]

A projection of long-range prospects for agriculture by Daly, Barton, and Rogers indicates that if this population growth occurs, requirements for farm products by 1975 will be around 40 to 45 per cent above 1953, under conditions of full employment, rising consumer incomes, higher levels of consumption per capita, and a moderate volume of exports. If the higher population assumption of 220 million people is used, projected utilization and needed farm output would be another five per cent higher.[8]

Livestock Products Increase

Under this projection, livestock products as a whole would need to increase more than 40 per cent from 1953 to 1975—more for meat animals and poultry, and less for dairy products. With crop output in excess of requirements in 1952-53, an output increase from that base year of about one-fourth in total crop production would meet prospective needs. A smaller output of food grains, with sizable increases in feed grains, many vegetables, and fruits would be indicated for 1975 under projected consumption rates.

Different rates of growth in demand and trends in agricultural technology on the supply side will make supply increases and adjustments more difficult for some commodities than for others. For example, the job ahead, including the need for land, varies considerably among crop and pasture groups. A tentative conclusion from the studies quoted on land resources, consumption and production is that the production job may be done by a combination of factors. These include:

(1) Overall increases in production of as much as 20 per cent per acre for crops and 30 per cent for pasture.
(2) Shifts in acreage from crops in excess supply to those in greater demand, including pasture.
(3) Additions of five to seven per cent to the cropland base.

Although large acreages of grassland and woodland are suitable for improvement as cropland, fulfillment of production needs in 1975 through increases in area of crop-

[7] United States Bureau of the Census. 1955. *Revised Projections of the Population of the United States, By Age and Sex.* 1960 to 1975. Series P 25, No. 123; and *Provisional Estimates of the Population of the United States,* August 10, 1956, Series P 25, No. 141.

[8] Daly, Rex F. *The Long Run Demand for Farm Products,* Agr. Econ. Res., July 1956. Vol. 8, No. 3; and Barton, Glen T., and Rogers, Robert O., *Farm Output, Past Changes and Projected Needs,* U. S. Dept. Agr., Agr. Inform. Bul. 162, August 1956.

land and pasture, alone, would represent a sharp departure from recent trends of increased production due to adoption of research results and exploitation of presently known technology. Chief reliance on meeting production needs by 1975 probably will depend on our ability to increase crop and pasture production per acre.

From an overall viewpoint, and judged by past trends, the size of the production job ahead is not likely to exceed the improvements that agriculture can attain. However, some of the important problems involved in attaining our production needs can be seen more clearly when the pattern of future production needs is considered. The greatest increase needed in crop production would be in feed crops, feed grains, hay, soybeans, and especially pasture. Crops for which little or no increase in production would be needed to meet requirements include major food grains, potatoes, and cotton.

Conversions in use of land are continuous but the rate is now slower than formerly because:

(1) Much of the poor cropland was shifted to other uses in the soil conservation and other agricultural programs before 1940 and

(2) Improvements and fertilization of existing cropland and pasture is adding to production without great additions in acreages.

Indications are that further large natural reversions of cropland to woodland cannot be expected in the Eastern states. Neither will there be large-scale clearing of forested land. The outlook for forestry in much of the remaining cutover and predominantly forest regions is better than for farming, except for fertile land that is especially well adapted to farming near population centers. However, probably there will be some gains for the country as a whole in the cropland and improved pasture area in the next two decades.

The acreage of land that is needed for production of food and other agricultural materials depends mainly on domestic demand, productivity of the land, livestock production per unit, and extent of exports and imports of farm products. In studying these influences, it should be noted that not only has population increased substantially, but that diets and certain other consumption items have changed in the last three decades. Because of these changes, shifts in acreages of certain crops are in progress. The total acreage of improved cropland and pasture probably will need to be increased gradually to

Land like this is suited only for timber production. Any expansion of crop acres must come elsewhere. But in many such areas, forests could be managed better to give maximum sustained yield.

care for the needs of the growing population for food and fiber, unless crop yields per acre and livestock production per unit are increased very substantially.

Where needed adjustments should be made and how the land resources may best be used to meet impending needs for agricultural and forest products are therefore of major importance. Present and future needs for cropland, grazing land and forests, the extent and location of areas available for the various uses, and possible changes in land use to meet these demands require careful investigation by public and private agencies before the changes actually become necessary.

We need more research and planning to raise crop and pasture yields and to lower costs per unit so that more efficient use can be made of our cropland and pasture. Considerable research effort will be needed just to maintain high level yields.

An additional part of the job ahead is the need for increasing the efficiency with which feed and labor are used in livestock production. In the past, livestock production per unit of input has risen at a much slower rate than has crop production.

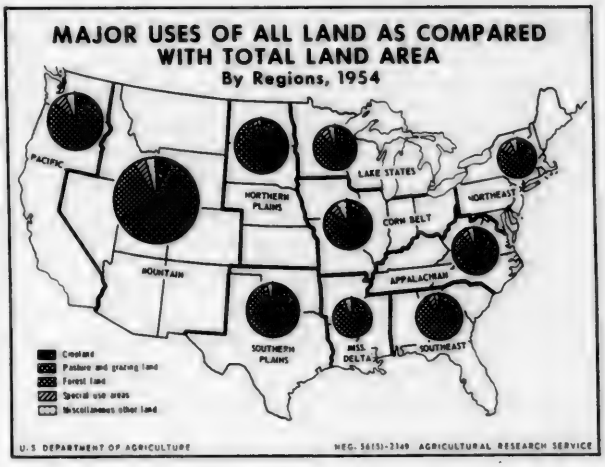
Need For Continued Research

Greater effort also needs to be directed to research and planning that will assist adjustments in acreage and production in order to produce the commodities most in demand. Since uncertainty exists as to the demand for food and as to the supply, say by 1975, there is need for continued research on this problem as related to population growth.

In all types of land conversions and investments, such as shifts from forest to cropland or from cropland to forest, the available technical means (such as soil, slope, forest, and land-capability surveys) should be used to guide selection of the best land for improvement and to discourage improvement of uneconomic areas for crop production, or cultivation of areas that cause serious wastage of soil, water, forests and other resources. The approach of a much larger population and the increase in demand for farm products indicate that the problem of how to make productive use of our land resources is a permanent one.

The chief justification for land inventories—both physical and economic—must be in terms of adjusting production to both present and future needs, and in conservation of the land resources to meet these needs.

This does not mean, however, that all land physically suitable should be improved, or brought into agricultural use immediately. Instead, we should carefully examine our land resources from time to time to see what will be needed over a period of years from the standpoint of individual farmers and businessmen, local communities.



and the country as a whole. These changes—improvement and development of farmland on the one hand, and shift of farmland from production to other uses on the other—should be guided by the facts as to how the land is being used now and how it may be used in the future.

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Preliminary Report of the Committee on Drainage*

There is opportunity for serious misunderstanding between professional groups interested in drainage, and wetland cooperative planning is made more difficult without an adequate nomenclature. The following report represents the Committee's attempt to present a nomenclature that will meet the needs of cooperative planning. The chairman and the editor will be glad to receive the comments of readers on content of the report.

THE *Soil Conservation Society of America* has long recognized the importance of land drainage in its program "to advance the science and art of good land use."

The Wetland Management Committee (2) emphasized the importance of wetland as a national resource without considering, in detail, problems of nomenclature related to the management of wetland. Because the consideration of technical problems by various professional groups invariably requires that a mutually understood nomenclature be established, the present Committee on Land Drainage takes, as its first task, the establishment of nomenclature in relation to the problems of drainage.

The present report represents a preliminary draft. Members of the *Society* and other readers are urged to send written suggestions for improvement directly to Wallace A. Mitcheltree, Lipman Hall, Rutgers University, New Brunswick, New Jersey. This committee has already received several suggestions for modification of the proposed nomenclature. It has been suggested that:

(1) The different systems of nomenclature be tabulated together with their authority.

(2) An expression be developed for distinguishing between the initial drainage of wild wetlands and the drainage of existing farmland.

(3) The term "excessively drained" be replaced by a term that more nearly reflects our present understanding of the soil moisture situation.

The present preliminary report is being called to the attention of the proper committees working on drainage nomenclature in the American Society of Agricultural Engineers and in the Soil Science Society of America. Both of these societies are also preparing preliminary drafts for nomenclature. It is anticipated that the SCSA Drainage Committee will prepare and present a final draft on nomenclature which has the approval of its two sister societies. Portions of the nomenclature approved by these societies may well be included in the final SCSA Drainage Committee report.

Intensive land classification of poorly and very poorly drained sites, together with their adjacent free water areas, has recently been completed by the Wetlands Classification Committee of the U. S. Department of the Interior Fish and Wildlife Service (4). This work has resulted in the establishment of 20 *land types*. They are:

Inland Areas

Fresh	*Saline*
1. Seasonally flooded basins or flats	9. Saline flats
2. Fresh meadows	10. Saline marshes
3. Shallow fresh marshes	11. Open saline water
4. Deep fresh marshes	
5. Open fresh water	
6. Shrub swamps	
7. Wooded swamps	
8. Bogs	

Coastal Areas

Fresh	*Saline*
12. Shallow fresh marshes	15. Salt flats
13. Deep fresh marshes	16. Salt meadows
14. Open fresh water	17. Irregularly flooded salt marshes
	18. Regularly flooded salt marshes
	19. Sounds and bays
	20. Mangrove swamps

This classification has been completed by regions of the United States and maps for each state are available to interested users. Areas of 40 acres or more have been classified by the above-listed types. In addition, the waterfowl biologist of each state has classified the areas for use by waterfowl into: *High, Moderate, Low* and *Negligible.* This classification is a relative one within each state.

Vulnerability is the third basis of classification used for wetland. Class I includes those areas where a known agent is adversely affecting the area or is expected to do so within a five-year period. Class II includes those areas that indicate some destructive factor will become operative in the foreseeable future. Class III includes those wetlands where no loss of wildlife is anticipated.

Thus, in terms of wildlife values, a satisfactory nomenclature has been established in terms of the categories of: (a) land type, (b) wildlife use, and (c) vulnerability to destruction. No more satisfactory nomenclature than the above has been developed by limnologists to characterize the conditions intermediate between open water and agri-

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* *This report was read before the 11th annual meeting of SCSA as a part of the Progress of Technical Committees. The session was held in Tulsa, Oklahoma on the morning of October 17, 1956.*

cultural or crop land. It should be pointed out that this nomenclature is based upon a premise of static conditions. It would be most desirable to have a nomenclature that would indicate the possible future direction of development of these areas from the point of view of plant succession and waterfowl developments. Such a more refined nomenclature is dependent upon further intensive research on wetlands.

The nomenclature of wetness or drainage is well defined for agricultural land. The natural *soil-drainage classes* are defined in detail elsewhere (6). They are listed here:

0	Very poorly drained
1	Poorly drained
2	Imperfectly or somewhat poorly drained
3	Moderately well drained
4	Well drained
5	Somewhat excessively drained
6	Excessively drained

The terms to be used for the general rate of water movement through the soil profile have also been defined (6). They are listed below as *internal soil drainage:*

0	None	3	Medium
1	Very slow	4	Rapid
2	Slow	5	Very rapid

Individual soil horizons have also been given a *qualitative permeability class* (6). They are:

1	Very slow	5	Moderately rapid
2	Slow	6	Rapid
3	Moderately slow	7	Very rapid
4	Moderate		

Additional technical nomenclature is available in relation to permeability (3) but it is not treated here. The horizon and soil profile characteristics which are determining factors in natural soil drainage classes are also important considerations in determining what engineering measures are to be used when artificial drainage measures are applied. A detailed discussion of the technical engineering terms used in underdrainage in humid areas is available (1). Because these terms are numerous and are not directly related to land and water terminology, they are not discussed here. It should be pointed out that there is a very great need, from the viewpoint of engineering, to develop a satisfactory means of designating what each system or combination of systems of artificial drainage does to the natural water relations of the area drained. This is implied in the method of drainage used but is not specifically stated.

The above technical terms are used in describing and defining land-capability classes. These classes are described in detail in the *Glossary* prepared by the *Soil Conservation Society of America* (5). It cannot be overemphasized that the land-capability class represents the highest or most intense safe use. There is no objection to using cultivated land for wildlife or grazing, provided that this use is profitable or desirable. The land-capability classes are:

Land Suitable for Cultivation and Other Uses

Class	*Description*
I	Very good land
II	Good land
III	Moderately good land
IV	Fairly good land

Land Not Suitable for Cultivation

V	Very well suited for grazing or forestry
VI	Well suited for grazing or forestry
VII	Fairly well suited for grazing or forestry
VIII	Not suitable for cultivation, grazing or forestry

Land-capability subclasses are used to designate the particular problem that places land in a capability class.

Recommendations

1. The nomenclature referred to above be utilized when wetland problems are discussed between professional groups.

2. The Society's Drainage Committee periodically review the nomenclature in the field of drainage so that confusion will not result as new terms are introduced or developed.

3. Continuing effort be made to clarify the concept of land-capability with special reference to drainage and problems related to wildlife management.

4. The Drainage Committee should make a joint effort with the Committee on Land Utilization to assemble information on the utilization and development of wetland.

5. The present Drainage Committee, which is a nomenclature study group, should be discharged and replaced by a group to carry out additional activities of this Committee.

Philip Allan
George R. Blake
W. W. Donnan
Neil Hotchkiss
P. W. Manson
Sterling A. Taylor
P. J. Zwerman, Chairman,
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Cornell University
Ithaca, New York

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CALIFORNIA AND THE SOUTHWEST. EDITED BY CLIFFORD M. ZIERER. *John Wiley and Sons Inc., 440 Fourth Avenue, New York 16, N. Y. 376 pages, illustrated. 1956. $11.25.*

This is the third in a series of regional geographies of the United States. The first study covered *The North American Midwest* and the second, *The Pacific Northwest. California and the Southwest* was written by thirty-two authorities on the subject of their specialization. Each chapter, therefore, stands as a complete essay on a given topic, yet the book as a whole gives a unified picture of the entire region. Included in the region are the states of California, Nevada, Arizona and Utah.

The book is divided into two parts. Part one covers the physical characteristics of the region and includes discussions of major landforms; weather and climate; water resources; soil resources and management, and vegetation. The second unit of the book features the early history of the region, agricultural activities, other kinds of resource use, manufacturing industries, transportation, trade and population patterns and political relationships.

Conservationists concerned with resource development programs will find this study extremely helpful.

ECONOMIC ANALYSIS OF FERTILIZER USE DATA. EDITED BY E. L. BAUM, EARL O. HEADY AND JOHN BLACKMORE. *The Iowa State College Press, Ames, Iowa. 1956. 218 pages. $3.50.*

Research on fertilizer production and use has been underway for many years. With fertilizer becoming an increasingly important item of farm expense, there is an increasing need by farmers and agricultural workers for economic data to help in determining quantities and kind of fertilizers that will maximize farm profits.

In 1955, the TVA sponsored a symposium bringing together a group of economists, agronomists and statisticians. Papers presented by this group served as the basis for this book. The objective of the symposium and of this book is *"To present the most recent information and techniques bearing upon some of the important questions involved in studies of the economics of fertilizer use, thus facilitating the development of needed research."*

This highly technical book is divided into five parts—I, Over-all Methodological Considerations; II, Fundamental Design and Prediction Problems; III, Agronomic and Related Considerations in Experiments and Fitting Functions to Existing Data; IV, Application of Data; and V, Trends in Use and Manufacture of Fertilizer. Thirty-one tables and 43 figures are used in the 14 chapters.

Research workers and those concerned wth the direction and administration of research and experimentation will find the information fundamental in improving research in the economics of fertilizer use.

Conservationists will appreciate the four chapters in part IV, Application of Data, and in particular, the chapter on Fertilization in Relation to Conservation Farming and Allocation of Resources Within the Farm. Dr. Heady points out that "fertilizer is a resource which can give returns in a relatively short period of time", and thus fertilizer can be used as an income complement where conservation farming involves major farm adjustment problems.

The material in this book delineates incisively methods of securing the fundamental fertilizer economic research data needed for recommendations for the use of fertilizers.

—E. L. SAUER, *Champaign, Illinois*

Tree Planting Practices in Temperate Asia: Japan. FAO FORESTRY DIVISION. PAPER NO. 10. *International Documents Service, Columbia University Press, 2690 Broadway, New York 27, New York. 156 pages, illustrated. 1956. $1.50.*

This paper deals with current planting practices in Japan and concerns seed, nurseries, nursery stock, planting methods and the tending of forests. It is well done and clearly outlines procedures used by foresters, many of which have application in other parts of temperate Asia.

Conservationists will find the section of the report that covers reforestation for soil erosion control helpful and revealing. It is exceptionally well done.

SOILS AND SOIL FERTILITY. BY LOUIS M. THOMPSON. *McGraw-Hill Book Company, Inc., New York, 451 pages, illus. 1957. $6.50.*

The second edition of this text for the beginning course in soils has been considerably improved and enlarged. The new 1957 edition has 451 pages compared to 339 for the 1952 edition. Most of the chapters have been rewritten. Repetitive writings in several sections have

been eliminated—what you read as you read is different. Soil fertility is stressed, as is also Iowa conditions.

A welcome portion to those in soil conservation work should be the 57 pages on "Soil Erosion and Its Control." The major factors affecting erosion and the mechanical practices that control erosion, particularly strip cropping, are rather completely treated. Many will question why the land use capability classes and the soil conservation districts were not mentioned. Little space is devoted to the study of wind erosion. The reference data is relatively old. Splash erosion is not mentioned.

The use of chelates with the minor elements and the discussion of chlorine as one of the essential minor elements is new material. The chapter on "Clay Minerals, Acidity and Alkalinity" includes some of the recent findings of such outstanding scientists in the field of soil clay mineralogy as Gieseking, Grim, Jackson, Kelley and Marshall. Vermiculite and the interstratified minerals are described.

There are separate chapters on "Nitrogen", "Phosphorus" and "Potassium." The chapter on "Potassium" is replete with the latest research data. The factors affecting the release of potassium, such as pH, the ratio of exchangeable calcium to exchangeable potassium, type of clay and the addition of lime are explained.

The role of soil microorganisms consumes only a few pages.

The chapter on soil formation and classification, particularly the characteristics of the Great Soil Groups are brought up to the Soil Science, Vol. 67, 1949, date. Throughout the book, many of the physical and chemical characteristics of the soil are related to the soil profile. The section on soil surveys should have included the nature and very large amount of work done by the soil surveyors of the Soil Conservation Service.

In studying the book, one soon is impressed by the author's great range of personal interest and experience in many areas of soils work. There are generous references to personal communications, hard to get at and valuable non-published material, digests of several review and summary articles and discussions with different well known specialists.

ROY P. MATELSKI, *Lincoln, Nebraska.*

HANDBOOK ON SOILS. *Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn 25, N. Y. 80 pages, illustrated. 1956. $1.00.*

Sixteen distinguished leaders in soils have joined to make this a down-to-earth "Handbook of Soils" for the home gardener.

It includes sections that deal with the slow release of nitrogen fertilizers, working the soil, living quarters for plant roots, soil testing, building up sand soil, earthworms, soil conditioners, and a host of others. Each subject is presented in a manner that can easily be understood by the average person interested in gardening, growing flowers and maintaining a good lawn.

The handbook separates fact from fancy and clearly shows what should be done to achieve the greatest returns from the soil. Some of the contributors include Dr. Firman E. Bear, Herbert A. Lunt, Emil Truog and George D. Thornton.

The many excellent illustrations give the handbook a practical value. Each helps to emphasize a point or shows "how-to-do" a recommended practice.

BETTER FARM MANAGEMENT. BY FRANK P. KING AND L. S. HARDIN. *Turner E. Smith and Company, Atlanta, Georgia. 426 pages, illustrated. 1956. $3.95.*

The purpose of this easy-to-read comprehensive book on farm management is designed to help young farmers to better understand the importance of management and to evaluate management problems on their own farms.

To achieve these objectives, the book is divided into six sections, each containing from two to six chapters. The primary sections cover "Farming as a Vocation," "Securing the Resources," "Measuring Farm Efficiency," "Planning the Farm Business," "Getting the Work Done" and "Testing the Decisions."

One of the outstanding parts of the book is entitled "Simplifying Farm Work." The authors show how young farmers can study their own work methods through four basic steps: Observe, think, plan and act. This entire section is rich in material and "how-to-do-it" suggestions designed to save time and make work easier—the objective being to lower unit production costs.

The "Suggestions for Study" found at the close of each chapter make *Better Farm Management* especially acceptable for use in vocational agriculture classes. Under this heading are questions for group discussion and suggestions for individual and group activities. This material has a practical slant and adds to the value of the book.

Generally, the content and arrangement of the book is simple, direct and effective. The manner of presentation is brief, complete and concise. It is also easy-to-read. The format is attractive. This, in part, is due to the many excellent illustrations used to give emphasis to the subject matter.

The authors have recognized the place of conservation farming in relationship to the total farm enterprise. This is done in two sections: One is entitled "Balanced Farm Management" and the other "Farm Layout." Both discussions show the general elements that are considered basic in developing and maintaining oil resources.

This is an outstanding book. It should meet with the approval of teachers of vocational agriculture, agricultural leaders and conservationists working with young farmers.

Field Notes

Latin American Agriculturists Meet

Many of Latin America's top agricultural policy makers attended the fourth Regional Conference for Latin America. The meeting was organized by the Food and Agriculture Organization (FAO) of the United Nations (UN).

The group placed considerable emphasis on co-ordinating technical assistance programs throughout the region and on selecting for regional treatment some problems which are common to several countries.

They also dealt with recent developments in the food and agricultural situation of the region; the programs of FAO in Latin America; rural welfare; improvement of soil fertility, coordination of forestry research, improvement of livestock and many similar problems.

Study Water Yield of Snowpacks

The U. S. Forest Service and the state of California have just started a five-year partnership project to find ways of improving the water yield from mountain snowpacks.

Water from snowpacks is important to California streams. It makes up about 40 per cent of the total stream flow. And is a much higher percentage in the periods between rains.

Henry W. Anderson will head up the new program.

Indiana Couple Win Title

A tenant farmer and his wife from Tippecanoe County, Indiana, Leonard and Martha Fouts, won the national award of "The Grange Young Couple of the Year" at the National Grange Convention in Rochester, New York.

Schedule Judging School and Contest

The National Land, Pasture and Range Judging School and Contest will be held at the Oklahoma City Fair Grounds on Thursday and Friday, May 2-3, 1957. This will be the sixth annual national event. Entries are open this year to FFA, 4-H, women and girls, college students and adults.

The available cash awards total more than $2,500. The first day, May 2, will be devoted to a training school in the local soils in the vicinity of Oklahoma City, and the local pasture plants. The cash prizes for the 4-H and FFA

National 4-H Conservation Award Winners

Each of eight national winners in the National 4-H Soil and Water Conservation Program received a $300 scholarship from the Firestone Tire and Rubber Company. From left clockwise are: W. Arden Colette, Longmont, Colorado; Doran L. Bollman, Pulaski, Iowa; Roger Payne, Barboursville, Virginia; Andrew Joe Reinert, Fairmont, Oklahoma; Raymond C. Firestone who presented the awards; Darrell Gibbs, Moultrie, Georgia; Rolland D. Christianson, Viroqua, Wisconsin; Fred Brown, Baxter, Tennessee; and David Bradway, Monson, Massachusetts. Photo was taken at 35th National 4-H Club Congress.

teams are approximately $200 for first place and about $40 for the high scoring individuals.

In addition to cash prizes, trophies and medals will also be given to regional winners from the northeast, southern, north-central, and the western part of the United States. The land judging contest will be held during the morning of Friday, May 3, and a separate contest of pasture and range judging will be held in the afternoon of May 3.

Tentative plans are being arranged for a leader's meeting, or representatives of each of the states, on the night of May 2. The awards dinner will be held May 3. Entries are open to every state in the Union, Puerto Rico, Hawaii and Alaska. Participation is open to those from other countries, and in the past, as many as 16 countries have been represented in the event.

For further information, write Jack Stratton, Farm Radio Director, WKY-TV, Oklahoma City, or Edd Roberts, Extension Soil Conservationist, Extension Service, Oklahoma A. and M. College, Stillwater, Oklahoma. You may obtain a brochure, bulletins and sample judging cards on land judging and pasture and range judging.

Conservation-minded Rancher Supplies Water for Thirsty Oklahoma Town

Most farmers in drouth-stricken Oklahoma are hauling water from town for their livestock, in the face of the state's worst drouth in history.

But an Oklahoma rancher has turned the tables—he's supplying water to a town. Free.

Washington county rancher E. G. Todd has solved the problem—at least temporarily—for Ramona, Oklahoma's 700 thirsty citizens who have been out of water in their own municipal lake since last June.

Todd is furnishing the town 40,000 to 50,000 gallons of water a day out of his 25-acre pond which was completed only two years ago as part of the network of reservoirs on the government's Double Creek watershed.

So far he hasn't collected a penny for the water, and doesn't intend to. Every day he watches his big pond go down another few inches as the town pumps the water out through pipes laid on the ground more than a mile to the municipal filter plant.

Todd expects to let the city have water as long as it lasts. He says it may hold out for another 3 months, but cocks a hopeful eye at the sky, praying rains will come before the pond goes dry.

It isn't the first time the young ex-marine and his wife, Jane, have played the good samaritans to Ramona. They gave the town 40 acres of land in 1953 on which to build a lake. The town floated a $50,000 bond issue to develop the water works.

The 6-acre municipal lake never did fill up completely, and drouth since has taken its toll. Last June the city pond went dry. Then is when Todd stepped in and offered water from his lake.

But not without some opposition from his youngest daughter, 7. She cried when her mother told her that Ramona would be getting water, and they couldn't use the lake anymore for swimming and water skiing.

It had been a favorite recreation spot for all the neighborhood kids.

Jane Todd explained to Terry that she mustn't be selfish—that people needed the water to drink. "If we give it to them, God will send a rain to fill our lake again," she said.

The rains haven't come, however, and Terry keeps asking her mother when God will keep his end of the bargain. "I haven't figured out a good answer yet," Jane said.

If fate had been more kind to Ramona, the town might have had an ample water supply today—perhaps from the same source it is getting water now.

At the time Ramona built its lake, there was talk of the government making Double Creek one of 60 "pilot watersheds" the Soil Conservation Service would build. If so, the SCS would construct 6 upstream dams in the area, and the city could have gotten water from at least one of the lakes by paying a part of the cost.

But the city fathers, after meeting with SCS officials, could get no hard and fast assurance that the project would go through. So they went ahead and built their small lake.

As it turned out, the SCS did build upstream dams—one of them on the Todd ranch. Todd's lake cost only $28,000 to construct and is four times larger than the city lake.

This lake on the Todd ranch was one of the stops for *Soil Conservation Society of America* members who went on the Double Creek watershed tour during the 1956 annual meeting.

—JACK PUTMAN, *Tulsa, Oklahoma*

E. G. Todd and His Ranch Lake

New Farm Group is Organized

A new organization known as Farmers in World Affairs has scheduled its first meeting for February 24-28 in the Kellogg Center at East Lansing, Michigan.

President of the group is Edward F. Holter, program specialist for the National Grange. Ray Newton of the Friends Service Committee is executive secretary.

Nash Makes Conservation Awards

Twenty winners of the 1956 Nash Conservation Awards have been announced by America Motors Corporation.

Ten professional workers were selected as "typifying America's thousands of conscientious, dedicated professional conservationists." Each will receive $500 and a bronze plaque.

The professional winners are:

Marshall T. Augustine, Annapolis, Maryland, work unit conservationist

Richard J. Dorer, St. Paul, Minnesota, Minnesota Department of Conservation

Charles D. Kelley, Montgomery, Alabama, formerly Alabama Wildlife Federation.

Bernard F. Manbey, Berkeley, California, National Park Service

Leon J. McDonald, Stillwater, Oklahoma, Soil Conservation Service

Roger T. Robinson, Anchorage, Alaska, Bureau of Land Management, Department of Interior

J. Clark Salyer II, Washington D. C., Branch of Wildlife Refuge, U. S. Fish and Wildlife Service

James K. Vessey, Milwaukee, Wisconsin, U. S. Forest Service

Richard L. Weaver, Ann Arbor, Michigan, University of Michigan

Norman G. Wilder, Dover, Delaware, Delaware Board of Game and Fish Commissioners

Plaques were also awarded to 10 non-professional conservationists "whose contributions to the conservation of natural renewable resources were made as acts of good citizenship."

L. C. Binford, Portland, Oregon
Edwin R. Conklin, Butler, New Jersey, teacher
Hoyt Ferm, Iron River, Michigan, instructor
Dr. Paul H. Fluck, Lambertville, New Jersey, physician
Walter A. Forred, Vermillion, South Dakota, clergyman
Herman Forster, New York, New York, attorney
Miss Ethel L. Larsen, Manistee, Michigan, clubwoman
John R. Lyons, San Diego, California, research consultant
Frederick W. Sturges, Macon, Georgia, business man
Les Woerpel, Stevens Point, Wisconsin, business man

★ ★ ★ ★ ★

Membership Awards Program Available for Chapters

An incentive program to stimulate membership development is now available for chapters. To participate, a local chapter must officially enroll in the program through their membership chairman or chapter officers. The national office will supply *Society* bronze emblem buttons for awarding chapter members who cooperate in the program.

The rules follow:

1. A chapter desiring to cooperate with the program must file an entry blank or indication of their desire to participate with the national office. The entry blank must indicate the period during which the chapter will conduct the program.
2. Every chapter member who secures five or more new members during the period of the contest or program will be eligible for a bronze emblem button. The individual must be a member of a chapter that is participating in the program. The top individual in each chapter (the person securing the most new members) will be awarded a special recognition. If more than 50 new members are secured by the chapter members, this will be a wall plaque. If less than 50, the top award will be a gold emblem button or gold emblem tie clasp for the top individual.
3. All records of the contest must be maintained by the local chapter. The national office is not equipped to handle records should all 93 chapters decide to participate.
4. Upon completion of the program the local chapter membership chairman and chapter chairman must certify to the national office the names of the individuals who complied with the requirements and are eligible to receive recognition. The emblems will then be sent to the chapter officials who are encouraged to present them with proper ceremony at a regular chapter meeting. Some chapters have held such ceremonies and state they are the most important phase of the program.
5. A chapter may supplement the incentives provided by the national office if they desire to do so.
6. It is suggested that chapters adopt a slogan or otherwise promote the program within the chapter. Harold Rhodes, national membership chair-

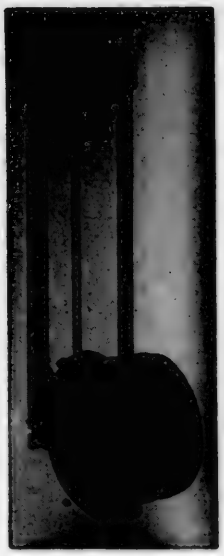
man, suggests calling it "Club Five"—all chapter members who secure five new members are eligible.

7. Membership application blanks and brochures may be obtained from the national office upon request.
8. About the middle of January, the national office mailed all members of the *Society* a letter requesting their assistance in securing new members.

If your local chapter has not adopted the above program, it is suggested you discuss it with the chapter officials at the first opportunity.

The opportunity to invite another to join the *Society* should be a pleasant assignment. Note the remarks of Warner A. Christeson, Chairman of the Red River Valley Chapter:

"It has been my belief that I need the Soil Conservation Society more than the Society needs me. We are so few and so far apart geographically that we must associate through the JOURNAL, *our Society and our chapters, to keep firm our individual convictions and ideals. When I read the* JOURNAL *or papers presented at conventions I am proud to be associated in the same movement as these men who display such serious thinking and purpose. If we are like the company we keep—the Society is mighty important."*



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School of Public Administration

The 12th annual School of Public Administration is scheduled for February 4 through March 1 at Montana State University, Missoula, Montana. The school is open to all persons who have had basic working experience in natural resources management or use.

Seven areas of study are to be included. They are (1) Psychology of Personnel, (2) Economics of Conservation, (3) Public Relations, (4) Principles of Administration, (5) Effective Writing, (6) Effective Public Speech, and (7) Community Relations.

Name New FAO Head

B. R. Sen of India became Director-General of the Food and Agriculture Organization (FAO) of the United Nations recently. He succeeds Dr. P. V. Cardon who resigned last March because of ill health.

Sir Hubert Broadley of the United Kingdom, Deputy Director-General, had been serving as Acting Director-General since that time.

New Officers of C.E.A.

Officers of the Conservation Education Association for 1957 are Howard Michaud, Purdue University, president; Edward Dolder, California Department of Natural Resources, vice president; and Wilson F. Clark, Eastern Montana College of Education, secretary-treasurer.

Dr. F. Olin Capps, Missouri Conservation Commission, and Charles Mattison, U. S. Forest Service, were re-elected as directors. Only new director is George W. Worley, Iowa State Teachers College.

Schedule Wildlife Conference

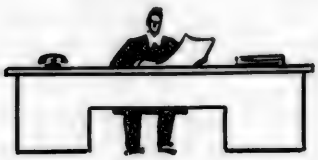
The 22nd North American Wildlife Conference is scheduled for March 4 through 6, in the Statler Hotel in Washington, D. C. The conference is sponsored by the Wildlife Management Institute.

The three-day meeting will include three general sessions and technical sessions on (1) Disease, Nutrition and Controls; (2) Wetlands and Inland Water Resources; (3) Upland Game Resources; (4) Marine and Coastal Resources; (5) Big Game Resources, and (6) Conservation Education.

Charles J. Kraebel has retired after 44 years with the U. S. Forest Service. He is widely known for research on conservation of natural resources.

News Notes

PRESIDENT'S COLUMN



It takes a lot of getting ready to embark on the program of our *Society* for 1957.

It seems to be up to the president to round out the committee appointments, and this needs to be done promptly if substantial progress toward achievement of the ambitious goals adopted at Tulsa is to be made by the time of our 1957 convention at Asilomar, California in late August.

One important item, of course, is the convention program and a committee, headed by Herb Fletcher of the Agricultural Research Service at Boise, Idaho, is already at work on plans for our meeting. Carl Brown and his technical committee on watershed management will work closely with the convention program committee.

J. S. Russell

It's through the committee work, the chapter activities, the JOURNAL, etc., that the *Society* can discharge its responsibilities. As of now we seem to be off to a good start. The 1957 executive committee held a meeting in Chicago in November — it may have been a bit premature since we did not assume office until January 1 but as Hill, Vessey, Barrows, Pritchard and I met, we did discuss *Society* business for the new year.

Our *Society* faces many challenging situations this coming year.

In the field of water and land utilization, the technical committees can make significant contributions and Wallace Mitcheltree of Rutgers University again has taken on the responsibility of organizing these committees for 1957.

And then there is the task of helping chapters to so organize programs of activities to best further the objectives of conservation and contribute to the professional advancement of the membership. Ross Davies of South Dakota is heading up our committee on chapter activities.

There are all kinds of things we should be doing and some of these don't necessarily fall within the scope of any single committee. The Northern Illinois Chapter at the meeting in Bloomington reported some frustration in attempting a project to restore some of the land ripped wide open by strip mining. An out-of-state coal company, after having ruined the land, displayed a most uncooperative attitude toward permitting the chapter committee to help repair some of the ravages of mining. Such land might be rendered useful and much more sightly for use as a recreation area, reforestation, or even for farming.

Is this a job for consideration by one of our technical committees or does it belong in the area of public policy or is it a special project for certain chapters?

But without belaboring the committee and organizational set-up, certainly *Society* members realize the need for a constructive program for a professional society like ours. But it also follows that the *Society* can't carry out an effective program without membership and without adequate finances.

We should have as members every last person working professionally in the various aspects of conservation or responsible for carrying out programs in these various fields.

Harold Rhodes—Dutch to his many friends—of West Virginia heads up our membership committee again and if we have the right kind of a program and if we are willing to tell other folks about what we are doing, it should be possible to gain the 2,000 new members in 1957 which is our goal.

Which reminds me that Wayne Pritchard has been pretty busy recently sending out from the office in Des Moines reminders that the time is at hand for payment of 1957 membership dues. He shouldn't have to remind anyone more than once and we

West Virginia Watershed Directors Join Society

The West Virginia Chapter of SCSA recently welcomed to its membership: an automobile dealer, two farmers, a college administrator, two school teachers, and an owner of a builders' supply firm. All are directors of the Upper Ten-Mile Watershed Association, Salem, West Virginia.

They have directed the association since its inception in 1954. Their group co-sponsors the Salem Watershed Protection Project with the West Fork Soil Conservation District at Clarksburg.

Under their leadership, flood prevention work has progressed on schedule. Six of seven detention structures planned for the 5,325-acre pilot watershed are in operation. A seventh dam is planned for construction this year. Tree planting, pasture improvement, and other land treatment measures are underway.

Walter C. Gumbel, Fairmont, West Virginia, SCSA council member, had this to say about the Salem Project: "The Salem Watershed Protection Project points the way to the future. The reaction of Salem people is one of pride and satisfaction that their pilot watershed project is proving it can do the job for which it is planned."

Board of Directors of the Upper Ten Mile Watershed Association, Inc., at Salem, West Virginia, in the West Fork Soil Conservation District. Seated, left to right: Walter A. Holden, Kenneth Summers, Edwin J. Bond, Herschel D. Wade, David L. Nicholson. Standing: Glenn L. Post and Harley D. Bond.

SCS Photo

can all help the *Society* a lot by prompt payment either through a chapter or sending remittance direct to the *Society* office.

That includes subscription to the JOURNAL too. If we are earnest about wanting a full time editor, an increased paid up membership is one way to make it possible. Walter Gumbel is head of an "editor selection" committee and we're hoping to be able to report progress in this direction soon.

In the meantime tell Wayne when you send in your dues—if you haven't already done so—any suggestions you may have as to what you'd like to see the *Society* doing or what you like about the JOURNAL or what you'd like to see in the JOURNAL. Maybe you would like to write to Editor Al Bull direct.

We can have a very good year for our *Society* if we are wiling to work at it together.

J. S. RUSSELL, *President*

Eight States Exceed Membership Quota

Eight states exceeded their membership quota for 1956. The quota was set early in the year by the national membership committee under the chairmanship of Harold M. Rhodes. The total goal of 2,000 was not quite reached, but 1,802 joined for the first time or renewed their membership during the year.

Oklahoma led all states and exceeded their quota of 100 by 237 for a total new membership of 337. Arizona, Arkansas, Colorado, Idaho, Maryland, Mississippi and South Dakota also exceeded their goals for the year. Mississippi enrolled 101 to follow Oklahoma. Several other states nearly qualified. The record follows:

Membership Report: New and Reinstated Members—1956

State	1956 Quota	Members Enrolled	Over or Under Quota
Alabama	50	15	−35
Arizona	25	38	+13
Arkansas	25	30	+ 5
California	70	31	−39
Colorado	25	30	+ 5
Connecticut	10	2	− 8
Delaware	10	1	− 9
Florida	50	27	−23
Georgia	25	13	−12
Idaho	20	39	+19
Indiana	50	11	−39
Illinois	60	57	− 3
Iowa	50	49	− 1
Kansas	50	50	0
Kentucky	60	46	−14
Louisiana	25	6	−19
Maine	10	9	− 1
Maryland	25	40	+15
Massachussetts	20	6	−14
Michigan	70	49	−21
Minnesota	40	31	− 9
Mississippi	50	101	+51
Missouri	60	6	−54
Montana	25	16	− 9
Nebraska	50	37	−13
Nevada	10	4	− 6
New Hampshire	10	2	− 8
New Jersey	50	25	−25
New Mexico	25	22	− 3
New York	25	13	−12
North Carolina	70	34	−36
North Dakota	50	29	−21
Ohio	70	34	−36
Oklahoma	100	337	+237
Oregon	20	4	−16
Pennsylvania	30	28	− 2
Rhode Island	10	0	−10
South Carolina	50	26	−24
South Dakota	50	93	+43
Tennessee	50	36	−14
Texas	50	24	−26
Utah	20	4	−16
Vermont	10	2	− 8
Virginia	25	25	0
Washington	20	15	− 5
West Virginia	70	49	−21
Wisconsin	70	40	−30
Wyoming	20	6	−14
District of Columbia	30	14	−16
Canada	50	9	−41
Foreign	50	110	+60
Misc.		77	+77
GRAND TOTAL	2000	1802	

Walter Jessee Honored By Oklahoma Members

Walter Jessee retired after 22 years with S.C.S. Here, he is congratulated by Harry Chambers, S.C.S.A. national council member.

November 29, 1956, was declared Walter Jessee day by the South Central Oklahoma Chapter and was observed during the regular fall chapter meeting. Many guests, representing all chapters in Oklahoma, were present to pay tribute to their respected friend, fellow member, and co-worker.

Walter B. Jessee, retired from the Soil Conservation Service November 30, 1956. He was work unit conservationist at Durant, Oklahoma, at the time of his retirement and had formerly served as district conservationist, range examiner, and soil conservationist.

Harry M. Chambers, national council member and chairman of the Oklahoma Council of Chapters, reviewed Jessee's 22-year career with the Soil Conservation Service and his work with the *Soil Conservation Society of America*. Mr. Jessee helped organize the chapter in 1952, was a former chairman, secretary, and member of numerous committees.

At the close of the evening Mr. and Mrs. Jessee were presented with gifts from other chapter members.

During the forenoon the Oklahoma Council of Chapters discussed plans for 1957 including budgets, a two day meeting in Oklahoma City in the fall of 1957.

During the afternoon session the members and guests toured four conservation irrigation farms in the Grady County Soil Conservation District. The tour was under the supervision of Vernon Martin, work unit conservationist of Chickasha.

Horace J. Harper, Director of the Agriculture Division of the Noble Foundation, presided and introduced Lyell Thompson, Soil Scientist with the Noble Foundation, who reported on his recent trip to Paris where he attended the International Soil Science Congress.

Member Appointed to High Position

Governor Christian A. Herter of Massachusetts, recently appointed by President Eisenhower as Assistant Secretary of State, is a member of the *Society* and a cooperator with his soil conservation district.

His membership in the *Society* was secured by L. Dow Eagles of South Carolina.

CHAPTER NEWS

High Plains

The High Plains Chapter in western Kansas is one of the new groups for 1956. At a meeting in Colby, Kansas, on September 26, 1956, the charter was presented by Executive Secretary Pritchard.

Julius H. Mai was elected chairman for the year; Herbert Queen, vice chairman; Lawrence Tedford, secretary-treasurer.

William Penn

The William Penn Chapter held its annual dinner meeting on November 20, 1956 in Upper Darby, Pennsylvania. Those present heard Albert Backer tell of his assignment in Alaska during 1956. He had mapped soils on Kodiak Island and Kenai Peninsula and illustrated his talk with colored slides.

During the business meeting Bernie Roth told of the chapter project of developing a

Philadelphia area conservation tour guide map. Chapter members are securing information and data from many official sources prior to completion of the project.

Elmer W. Gain was reelected chairman; Gail W. Eley, vice chairman; Joseph Bornstein, secretary, and Donald Stockwell, treasurer.

Julian Prundeanu, Head of the Agronomy Department at National Agricultural College, Doylestown, Pennsylvania and seven of his students were guests at the meeting.

South Dakota

The South Dakota Chapter Soil Conservation Society of America publishes an 8 page, colorful mimeographed newsletter with clever art work pictures, well-written articles about chapter members and their activity, salty stories, prose, etc. It is mailed quarterly to the entire membership in that state.

San Francisco Bay

Franklin H. Ernst, for many years a specialist in agricultural extension with the University of California, gave a talk on "The Agriculture of Viet Nam" at the chapter meeting on December 3, 1956.

Stillwater

This new chapter met on November 5, 1956, in the conference room of the Agriculture Center Building at Stillwater, Oklahoma. N. E. Winters was elected chairman; Edd Roberts, vice chairman; R. J. Chance, secretary-treasurer. Ten committees were established as follows: executive, membership, constitution and by-laws, chapter meetings (program), meeting facilities, finance, election and reports, chapter activities, information and reference material. An awards or recognition program was suggested as was the sponsorship of a student chapter at Oklahoma A & M College.

Custer

The Custer Chapter met in the Provident Life Building in Bismarck, North Dakota, on December 8. Elmer L. Worthington was in charge of the program and secured Dr. Marvin Laraas of Valley City State Teachers College to discuss the work of the State Conservation Training Center at Lake Ashtabula in that state.

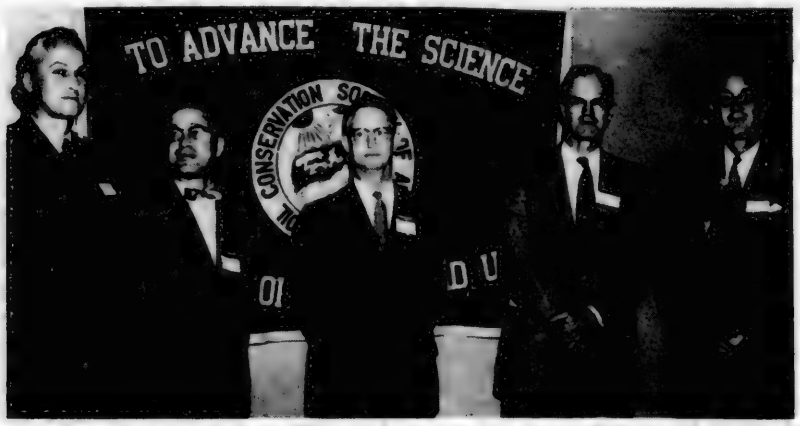
Ozark Mountain

The chapter met at Fort Smith, Arkansas, on December 1 where a dinner was held. The chapter reported that about ten days following the national convention at Tulsa they mailed a letter to many members and prospective members reporting on the meeting and encouraging membership in the *Society*.

East Texas

Starting the year with 38 members, the East Texas Chapter had 42 at the close. They reported holding five meetings during the year with varied programs. On November 9, 1956, they held the final program for the year with a Forest Field Day. This was in cooperation with the Experiment Station of the U. S. Forest Service.

Northern Illinois Chapter Meeting



Attending the Northern Illinois chapter meeting were (left to right) Col. J. B. W. Corey, Jr., U. S. Army Corps of Engineers, Chicago; Lindo Bartell, chapter chairman, Champaign; J. A. Johnson, S.C.S., Spartanburg, South Carolina; B. B. Clark, State Conservationist, Champaign; and William C. Ackerman, State Water Survey, Urbana.

The Northern Illinois Chapter met at Illinois Wesleyan University, Memorial Center, Bloomington, Illinois, on November 16, 1956. The chapter met during the afternoon to hear J. A. Johnson of the Soil Conservation Service, Spartanburg, South Carolina, discuss "Principles of Water Rights." William C. Ackermann, Chief of State Water Survey Division, Urbana, discussed "Water Resources in Illinois."

B. B. Clark, State Conservationist, Soil Conservation Service presented "The Soil Conservation Score in Illinois" while Col. J. B. W. Corey, Jr., Corps of Engineers, discussed, "Coordination of Water Development Projects Between the Corps of Engineers, U. S. Department of Agriculture, and the State of Illinois.

Banquet speaker was J. S. Russell, President-elect, Soil Conservation Society of America, who discussed "The Human Element in Natural Resources Conservation."

Each year the chapter presents an award to an outstanding member. It was granted to George K. Stephenson at the November meeting. He was additionally honored by being elected chairman of the chapter for 1957.

Others elected included: Floyd Sanders, vice chairman; Kenneth Compton, secretary-treasurer; Dale Bidwell, director; E. D. Bolton, director.

Salina Chapter

The Salina Chapter met at Lindsberg, Kansas, late in September with more than fifty in attendance and elected Tom Dicken as official delegate to attend the Tulsa meeting of SCSA.

On November 27, 1956, the chapter met at Lincoln, Kansas to hear a report by Dicken.

At the September meeting, C. W. Layne, Geologist, Ground Water Branch, U. S. Geological Survey, Lawrence, Kansas, gave a talk on Ground Water in Kansas. At the November meeting Nat Tolman, Bureau of Reclamation, gave a talk on Irrigation Operation in the Great Plains Area.

Robert T. Schafer will serve as chapter chairman for the coming year; James J. Rockers, vice chairman; Gene F. Bohenblust, secretary; William L. Sheppard, treasurer.

Upper Kentucky River

A regular meeting of the Upper Kentucky River Chapter was held at Hazard, Kentucky, on December 19, 1956.

It was decided at the meeting that one member of the chapter will make a report on an outstanding article in the current issue of the JOURNAL OF SOIL AND WATER CONSERVATION at each regular meeting. Windshield stickers of the *Society* emblem will be secured for each member to use on his private auto.

Robert H. Marcum of Hazard, Kentucky, was elected chairman; Denver L. Farmer, vice chairman; William H. Dempsey, secretary-treasurer. Clay W. Ratliff was appointed membership chairman and M. P. Caudill, program chairman.

Hoosier

The Hoosier Chapter has developed a newsletter and issued the first number in November. A list of all Indiana Society and Chapter members was printed therein. Two copies of the letter were mailed to each member who was asked to hand the extra copy to a non-member and invite him to join. Five members of the Hoosier Chapter attended the national meeting at Tulsa, Oklahoma.

The chapter held its most recent meeting on January 11, 1957, in Indianapolis, Indiana.

The chapter recently announced in their newsletter a 24 per cent increase in membership.

South Carolina

The South Carolina Chapter issued a two-page report on the national meeting at Tulsa to all their members. The letter called particular attention to the paper of Dr. Graham which apeared in the November JOURNAL. A membership blank was attached to each copy of the newsletter encouraging present members to secure additional individuals.

Manhattan

The Manhattan Chapter held its December meeting on Friday evening, December 7, at the Student Union Building, Kansas State College in Manhattan, Kansas. Forty-seven members, wives and guests were present.

Mr. Olin Deibert, Irving, Kansas, banker and member of the *Society*, was the principal speaker. He gave an illustrated talk on the banker's outlook on good land use with emphasis on the small watershed and community action. His talk was entitled "Banking and Conservation."

Congressman William Avery, Chapter member, telegraphed from Washington, D. C., his regrets that he would not be able to attend the meeting. Reports to the Chapter were given by Dr. W. S. Chepil on the SCSA annual meeting at Tulsa, and by Kenneth Sherrill on action taken by the project committee of the Chapter.

Officers elected for 1957 include O. W. Bidwell, Manhattan, chairman; B. K. Geraghty, Manhattan, vice chairman; Kenneth Sherrill, Wamego, secretary-treasurer; and Elmer Betz, Junction City, council member.

—C. W. STEWART, *Reporter*

University of Michigan Student Chapter

Because conservation is an integrated field that must draw heavily from the natural and social sciences, the University of Michigan Student Chapter members are anxious to discover and discuss the relationships between conservation and the other disciplines, as well as to enlarge its understanding of allied subjects.

To facilitate the exchange of ideas on these topics, a series of seminar discussions were held during the fall months.

The following meetings were scheduled:

"The Study of Natural Communities and Its Significance to Conservation," Francis C. Evans, Department of Zoology.

"The Relation of Wildlife Management to Soil Conservation," Warren Chase, Department of Wildlife Management.

"The Great Lakes Research Institute and Its Activities," David Chandler, Department of Zoology.

"The Itasca State Park Management Program and Its Effect Upon Policy Formation," Stephen Spurr, Department of Forestry.

"Ground Water and Conservation," James Zumberge, Department of Geology.

"The Role of the Forester in Watershed Management," Robert Dils, Department of Forestry

W. T. (Terry) White Deceased

W. T. (Terry) White, Executive Secretary of the American Society of Range Management since January 1952, died at Providence Hospital, Portland, Oregon, on the morning of December 10, 1956. Terry had been seriously ill for a month prior to his death and had been in poor health for several years. He was known not only in the Range Management Society, but had many friends in the *Soil Conservation Society of America*.

John G. Clouston of Box 4137, Portland 8, Oregon, has been named to succeed him as executive secretary.

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Secretary's Column

The *Soil Conservation Society of America* is now eleven years of age. The eleventh volume of the JOURNAL OF SOIL AND WATER CONSERVATION has been published. Eleven annual meetings have been held and several chapters are eleven years of age. As the calendar year 1956 closed, the *Society* had a membership of 6,822. This is the largest enrollment at the close of any calendar year.

H. Wayne Pritchard

During the past year, 11 chapters have been formed to bring the total to 93. Only one of this number has discontinued while seven others have combined their efforts.

Many chapters carry out significant conservation projects and conduct business and discussion programs of great value to the conservation movement in their territory.

The national committees of the *Society*, functional and technical, have developed programs and projects that are far-reaching in their influence.

The objectives committee has studied methods the *Society* may use to implement the objectives of the organization. They have proposed that the *Society* adopt a publicity program on basic conservation problems, achievements, meetings, awards. They have recommended the adoption of a conservation ethic, adoption of a comprehensive policy dealing with the conservation of all natural resources, and an expansion of the *Society's* award program. The same committee believes we should investigate the possibility of interesting publishing concerns in issuing more educational materials for primary and secondary school children. They recommended the adoption of annual *Society* goals.

At the recent meeting of the national council many of their suggestions were activated.

Other committees have made similiar progress. The Spanish Glossary Committee should complete its work during 1957. The Archives Committee is gathering material for future use. Much of the work of the technical committees has been a part of the annual meeting program.

The International Relations Committee is in constant contact with conservationists throughout the world. Their work brought about the agreement with the International Cooperation Administration to assist in providing foreign technical personnel, trained in the United States, a membership in the *Society*.

Elsewhere in this issue you will read a column by President J. S. Russell—and a program adopted by the *Society* for 1957.

As executive secretary I want to express appreciation for the cooperative spirit and effort of all members, chapters, and officials. Through such cooperation the *Society* has experienced a certain degree of success in carrying forward the stated objectives of the organization.

An organization never remains static. It either grows and developes or it declines. It depends first on loyal members who support it financially and by giving of individual time and effort. When efficient use is made of such talents and resources, accomplishments are made.

The *Society* today has an approximate net worth of $36,000 and for the past several years has had a gross income of about $50,000.

Each year brings new and challenging problems for the *Society*. The year 1957 is no exception. As an "adolescent" the *Society* must grow in number of members and in service to the members.

Why? To carry on the program outlined by the council—the program desired by the members: A full-time editor, adoption of awards and recognition programs, publication of monographs, and other forward steps seem necessary.

The *Society* is confronted with increasing costs. Since the national office opened in 1952, cost of supplies has increased by 25 per cent. Last year it cost six per cent more than in 1955 to print the JOURNAL OF SOIL AND WATER CONSERVATION. Office rent is up 20 per cent, primarily because of need for more space.

Coupled with rising costs, the JOURNAL OF SOIL AND WATER CONSERVATION faces a decrease in present type of advertising. We have had the advertising of many farm equipment firms but currently their markets have been curtailed because of farm economic conditions and they are generally limiting their budgets. It will affect the *Society* in 1957.

Alarming? Not for the present! But it is time for action on the part of every member. We cannot increase dues under the present constitution and by-laws without a favorable vote (with a two-thirds majority) by the membership. A vote is not contemplated and has not been discussed by the council.

The solution? There are several:

1. A rapid increase in membership from the present 7,000 to 10,000 or even 15,000.
2. An increase in the number of sustaining members. This is $25 for the individual and $100 for firms.
3. A diversification of advertising to include new groups such as seeds, fertilizer, irrigation, and the like.

New membership is best sold by present members. It should be an easy task to increase the membership. Every member knows someone who would join upon invitation and encouragement.

One person suggested to me there should be at least five members of the *Society* in each soil conservation district. That would mean a total membership of more than 14,000. And think of the potential elsewhere.

More individuals who have been members of the *Society* for several years may want to consider a sustaining membership. Business firms valuing the services of our members may want to support the *Society*.

In regard to advertising, I would request that any member with suggestions relating to possible advertisers send such information to the national office.

With your assistance the *Society* will grow in membership and in services to the members. Just as a church, a business, or an institution, the *Society* would not amount to much unless we were striving for a goal. An organization is healthier when it is at work. We have the goals, we must strive to attain them—we have work to do! May we count on your assistance? Why not secure a new membership today?

H. WAYNE PRITCHARD
Executive Secretary

Society Development in Ceylon

Sumith Abeywickrema of Morawaka, Ceylon, on November 16, 1956, had an article published in *The Times* of Ceylon entitled "A Practical Approach to Soil Conservation." The article was primarily an outline of impressions he gathered while on a visit to the United States early in 1956, and how he has analyzed the information as it applies to Ceylon.

Near the end of his article it stated: "In terms of Ceylon's requirements our greatest need today is to create a voluntary organization like the *Soil Conservation Society of America*. Today, America is devoting more attention to conservation than any other nation. The people of America are aware that they can maintain world leadership so long as the soil remains productive."

The following day an editorial appeared in *The Times* commenting on the status of conservation in Ceylon and the editorial closed: "A voluntary organization on the lines of the *Soil Conservation Society of America*, to which reference was made in the article published on this page yesterday, might be the answer to the popular indifference that now prevails."

Flannery in Iraq

R. D. Flannery, formerly of Berkeley, California, has sent word to the *Society* that he is now in charge of the land development activities for the Tippetts-Abbett McCarthy Stratton Company in Southern Iraq. Flannery was active in the San Francisco Bay Chapter at the time it became interested in the annual meeting to be held at Asilomar, August 28-31, 1957.

Several 1957 Committee Chairmen Announced

President J. S. Russell has announced the chairmen of several 1957 committees. A complete list of all such committees will be carried in the March *Journal*. Members desiring to contact the respective committees are encouraged to write the following chairmen:

Annual Meeting Program Committee
Herbert C. Fletcher
P. O. Box 835
Boise, Idaho

Annual Meeting—Local Arrangements Committee
Fred A. Haughton, Jr.
3 Douglas Court
Orinda, Calif.

Chapter Activities Committee
Ross Davies
Soil Conservation Service
Huron, South Dakota

Finance Committee
Frank C. Edminister
P. O. Box 670
New Brunswick, New Jersey

Editor Selection Committee
Walter C. Gumbel
P. O. Box 1392
Fairmont, West Virginia

Nominations Committee
Irving B. Stafford
18 Drumlins Terrace
Syracuse 10, New York

Awards Committee
Herbert A. Hopper
Rm. 2079, 722 Capital Avenue
Sacramento 14, California

Sustaining Membership Committee
Morris Fonda
147 South Indiana Avenue
Kankakee, Illinois

Membership Committee
Harold M. Rhodes
R. 3
Morgantown, West Virginia

Administrative Action Committee
Russell G. Hill
412 Agricultural Hall
Michigan State University
East Lansing, Michigan

Personnel Committee
Louis M. Thompson
120 Curtis Hall
Iowa State College
Ames, Iowa

International Relations Committee
O. M. McConkey
Ontario Agricultural College
Guelph, Ontario, Canada

Organization and Policy Committee
Roy Hockensmith
2382 McKinley Place N.W.
Washington, D. C.

Archives Committee
T. S. Buie
3120 Duncan Street
Columbia, South Carolina

Objectives Committee
Philip F. Allan
251 Culver Road, R. 5
Ithaca, New York

Fellows and Honorary Member Committee
Ralph H. Musser
Soil Conservation Service
South Agriculture Building
Washington 25, D. C.

Publications Committee
Harper Simms
Soil Conservation Service
South Agriculture Building
Washington 25, D.C.

Editorial Board
Elmer L. Sauer
207 Davenport Hall
University of Illinois
Urbana, Illinois

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When left- and right-hand bottoms are used alternately, this mounted tool turns all furrow slices in the same direction to keep irrigated fields level, or to combat downward movement of soils on hillsides. No back furrows. No "dead" furrows.

On sloping fields and hillside contours, you can lap all furrows uphill so that each furrow slice forms a miniature terrace. Water runoff is retained, soil loss reduced. The upper rear wheel of the tractor always runs in the furrow, keeping the tractor more nearly level. The plow works with the tractor's hydraulic TRACTION BOOSTER system to provide extra pulling power. Quickly mounted with SNAP-COUPLER hitch.

An Allis-Chalmers 2-way, spinner-type plow will help you hold your soil where you want it. As a soil conservation tool it can't be beat. See your Allis-Chalmers dealer.

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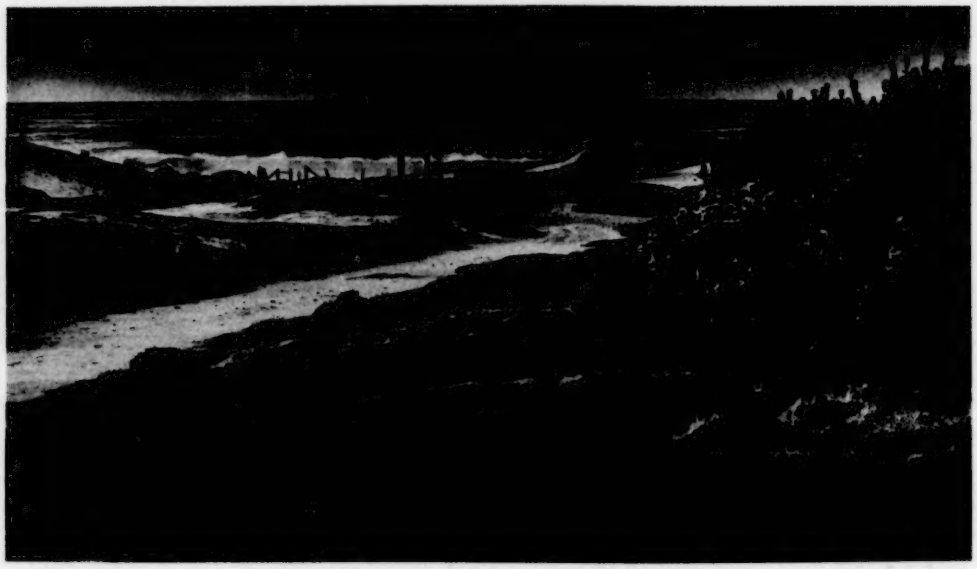
LISTEN TO *the National Farm and Home Hour on your NBC radio station, Saturday, February 9, for a special report from the National Association of Soil Conservation Districts Convention at St. Louis.*



Beautiful scenery will be but one of the enjoyable parts of the 1957 annual meeting. Shown here are part of the Asilomar grounds looking toward the Pacific Ocean. The 1957 meeting will be held at Asilomar on the Monterey peninsula in California.

California—Here We Come!

The Twelfth Annual meeting of the *Soil Conservation Society of America* will be held on America's most colorful Peninsula—Monterey.

Monterey Peninsula approximates thirty square miles in area. Three well known towns—Monterey, Pacific Grove, and Carmel-by-the-Sea—are located there. The convention will be held at Asilomar Hotel and Conference Grounds in Asilomar Beach State Park, situated on the tip of the Peninsula.

Asilomar, located in 60 acres of pine-clad hills, combines the serenity of the forest with breathtaking views of cypress, surf, and white sand on the shores of the blue Pacific.

Society members at the Tulsa meeting heard Herb Hopper and Fred Haughton of the San Francisco Bay Chapter tell about the 1957 convention plans. Those who heard them probably thought they were over-zealous when they talked in superlatives of the advantages to combine a vacation trip for the family and an opportunity to attend the *Society's* twelfth annual meeting.

Further investigation substantiates their viewpoint.

Do you recall their story about the "Butterfly Trees?" They exist! People of Monterey Peninsula consider the monarch butterfly something special—and with good reason. Each year, one of Nature's most amazing spectacles occurs there. Great clouds of butterflies, covering the sky for miles, come soaring across Monterey Bay from far-off British Columbia and the Canadian Rockies. The monarchs, only species in North America addicted to migration, settle on a cluster of pine trees at Pacific Grove for the winter. They literally cover the "Butterfly Trees" with color.

It continues to be a mystery how they find their way to the same locality year after year for no butterfly makes the trip more than once. The life span of the monarch covers about ten months.

Pacific Grove is a busy community of 11,000. It is 120 miles south of San Francisco, 365 miles north of Los Angeles. It is served by Southern Pacific Railroad, Greyhound Bus and Southwest Airlines.

Near Asilomar visitors will have the opportunity to take trips on glass bottomed boats to view the marine gardens. Boats and tackle are available for rowing and fishing and launches are rented out for deep-sea fishing. The Museum in Pacific Grove houses one of the largest butterfly collections in the world, as well as nationally recognized marine exhibits.

Enticing? Books have been written about Monterey Peninsula. You will want to take your family to the convention of the *Soil Conservation Society of America* in 1957. The rates are reasonable and you will live on the American plan. The *Society*, through members of the San Francisco Bay Chapter will handle all reservations. Many types of accommodations are available. Meals are semi-cafeteria service.

Complete information about housing and reservations will be sent all members later—in fact an advance questionnaire regarding your possible attendance will probably be mailed all members in the near future. The most important phase of your trip will be for you to reach an early decision that from August 28-31, 1957, you and your family will attend the Twelfth Annual Meeting.

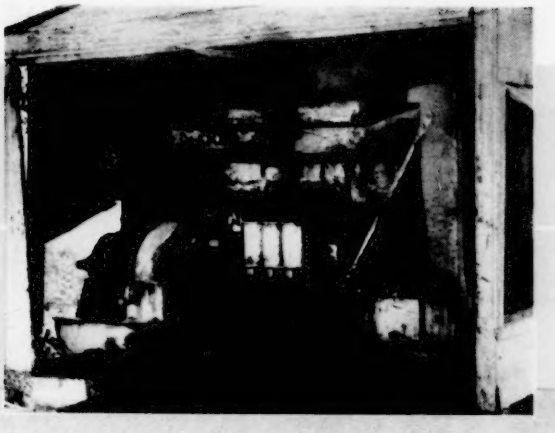
Pacific Grove has modified blue laws which among other bans, forbid "dances known as the tango, the turkey trot, bunny hug, or shimmie . . . " Since this is the situation, the annual meeting program committee under the chairmanship of Herbert C. Fletcher, Agricultural Research Service, P.O. Box 835, Boise, Idaho, is arranging a program with major emphasis on all phases of water management problems. Consideration will also be given to the diversion of agriculture land to non-agriculture uses. Other subjects will also be outlined.

Any member with suggestions for the program committee should contact the chairman or the national office.

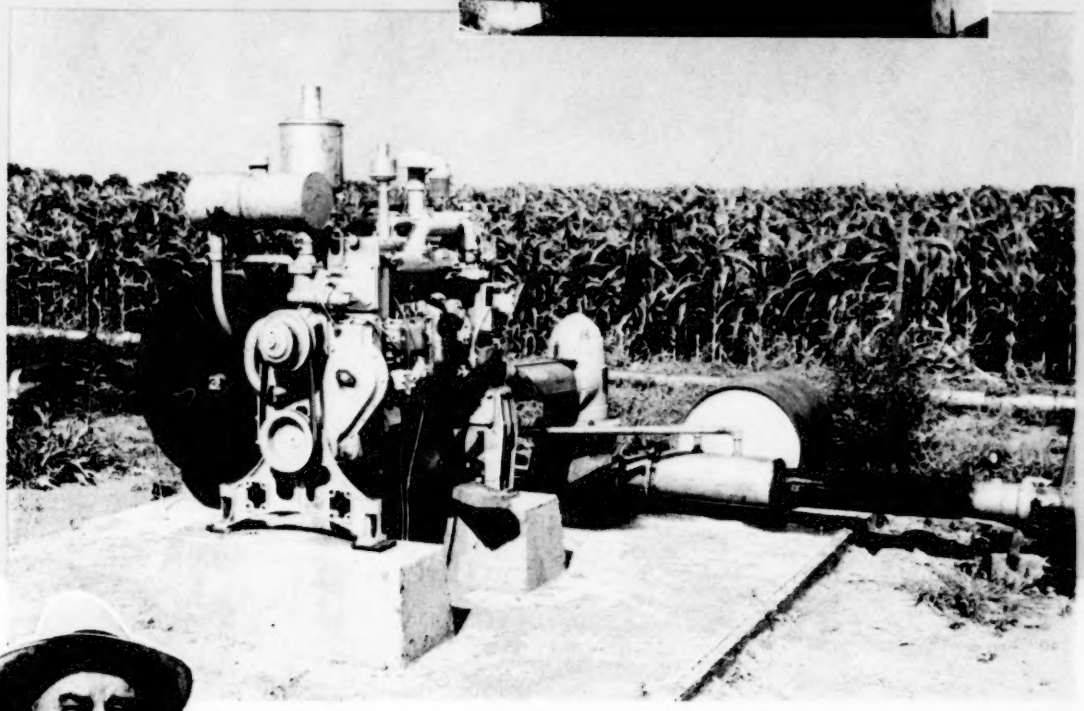
Remember—August 28-31, 1957!

This is Merrill Hall, the auditorium on the Asilomar gounds. Some of the 1957 SCSA meetings will be held here.

25 Years old



1 year old



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Back in 1941 Dewey Fessler, Sutton, Nebraska, bought a 10-year-old Cat D9900 Diesel Engine. This engine had already seen heavy-duty service on construction work. It was overhauled and installed on the Fessler farm and has worked an average of 1,000 hours a season during the watering months, operating at full throttle day and night. During the 15 years to date, the engine has received no major overhauls. At full load it burns about two gallons per hour of furnace oil.

Small wonder that when Mr. Fessler needed another engine he chose another Cat Diesel, and that his sons also installed a Cat Engine on their nearby farm. Mr. Fessler says, "As far as I am concerned there is no engine finer than a Caterpillar. They are built right and in the long run will cost less. That's why I own two Cat Diesel Engines. I am convinced they are the best there is."

When you are planning an irrigation system you make a wise decision when you power your pump with a Caterpillar Diesel Engine. You can burn the lowest cost fuels available. Oil changes run up into the thousands of hours on larger engines. No air boxes or ports to clean. Replaceable full length, wet cylinder liners are "Electro-Hardened" for long life.

Your Caterpillar Dealer will gladly help you select the engine you need and stand behind it with his experience and reputation. See him soon. And write us for your free copy of "Soil and Water Conservation." Address: Dept. JS17.

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Working around short-radius curves is easy for Austin-Western Power Graders . . . impossible for graders with front steer only.

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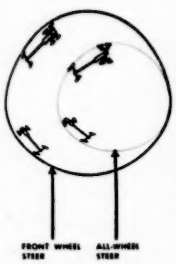
Only Austin-Western offers you the unbeatable combination of all-wheel steer *plus* all-wheel drive *plus* torque converter drive in 4-wheel and 6-wheel models. All-wheel steer means top maneuverability . . . you ditch around sharp curves, move dirt up slopes from deep, wet ditches, grade superelevated curves with no gouging or wasting. A-W Power Graders turn around on narrow roads with only one backup, travel quickly and easily where ordinary models cannot go, move the heaviest windrows farther and faster. All-wheel drive means that every pound of the machine is harnessed to a driving wheel — no idling wheels, no lazy front ends to use up power and lower efficiency. Every pound is working weight, contributing 100% to traction, utilizing the whole engine output, delivering maximum power where it counts — at the blade.

Together, all-wheel steer and all-wheel drive make possible A-W's unique Controlled Traction. By offsetting the machine, the operator can put front and rear wheels where traction is best, can eliminate all side-thrust at the toe of the blade (usable over its entire length), and can balance the whole power of the grader against the load.

In addition, you get unusually versatile blade manipulation, and fingertip management of all blade and wheel movements by full hydraulic control. And A-W Power Graders have the most complete line of time- and labor-saving attachments in the industry. See your nearby A-W distributor. Or write us for detailed information.

The two circles above, with their 62 and 90-ft. diameters, illustrate the difference that all-wheel steer makes. This extra maneuverability saves time on every job, makes it possible to do more jobs—faster, easier and cheaper every month of the year.



All-wheel steer and all-wheel drive team up with the blade on A-W Graders —the rear drivers push behind the toe of the blade, the front drivers pull ahead of the heel of the blade. As a result, the machine moves straight ahead under perfect control.

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